

DEVELOPING BEST PRACTICES
FOR PROMOTING PRIVATE SECTOR
INVESTMENT IN INFRASTRUCTURE

ROADS

The views, conclusions, and recommendations presented here are those of the study consultants, and should not be considered to represent the official views of the Asian Development Bank or its member governments.

© Asian Development Bank 2000

ISBN No. 971-561-280-6
Stock No. 010300

Published by the Asian Development Bank
P.O. Box 789, 0980 Manila, Philippines

For more information on ADB, visit <http://www.adb.org>

FOREWORD

This report is one of a series of five commissioned by the Asian Development Bank (ADB) to identify and recommend best practices to be followed and specific steps to be taken, by ADB's developing member countries in order to encourage both private sector investment and competition in infrastructure development. The study was financed through a \$600,000 regional technical assistance grant - RETA 5753: *Developing Best Practices for Promoting Private Sector Investment in Infrastructure*. This report focuses on the road sector; the other reports cover the power, water supply, airport and air traffic control, and port sectors.

Transport is central to achieving prosperity and the quality of life, to which all countries aspire. Transport policy has pervasive impacts: on economic performance; on the shape and structure of human settlements through its impact upon physical development and economic structures; on the distribution of income; and on the environment. This report develops best practices for promoting private sector investment in the road sector. It defines the objectives of private sector participation, reviews experiences of private sector participation in Asia and elsewhere, examines the degree of success that has been achieved to date, and identifies the key issues that provide the basis for determining best practices. In addition, the report discusses ADB's role in facilitating both private sector participation and competition in the road sector. It is hoped that the report will help ADB's developing member countries successfully attract well managed and cost-effective private investment.

The five reports have benefited from the support of and valuable contributions from many individuals, both inside and outside ADB. The reports were prepared by a team of individual consultants: Water Supply - Michael Porter of Tasman Asia Pacific; Power - Elliot Roseman of PricewaterhouseCoopers; Ports - John Arnold, an independent ports specialist; Airports and Air Traffic Control - Ian Jones of National Economic Research Associates; and Roads - Roger Allport of Halcrow Fox. In ADB, Sean O'Sullivan, Senior Public/Private Sector Specialist managed the technical assistance implementation with the help of Marcelo Minc, Project Economist. ADB staff in the Energy; Transport and Communications; and Water Supply, Urban Development and Housing Divisions as well as the Private Sector Group helped in guiding the direction of the study and in reviewing the outputs. In December 1998, a workshop, hosted by ADB as an integral component of the study, provided a forum for the exchange of ideas and experiences. Participation and contributions of delegates from many developing member countries and representatives from the private sector in the workshop were very much appreciated by ADB.

The publication of the five reports is especially timely as it coincides with the introduction of a new strategy for private sector development by ADB.

Vladimir Bohun
Director
Infrastructure, Energy and Financial
Sectors Department (East)

ABBREVIATIONS

ADB	– Asian Development Bank
BOI	– Board of Investments
BOOT	– build-own-operate-transfer
BOT	– build-operate-transfer
CDCP	– Construction and Development Corporation of the Philippines
CPI	– Consumer Price Index
CREMA	– Contrato de Recuperación y Mantenimiento
CTS	– Comprehensive Transportation Studies
DBFO	– design-build-finance-operate
DMC	– developing member country
DNV	– Dirección Nacional de Vialidad
DOH	– Department of Highways
DPWH	– Department of Public Works and Highways
EBRD	– European Bank for Reconstruction and Development
EIRR	– Economic Internal Rate of Return
EPU	– Economic Planning Unit
ETA	– Expressway and Rapid Transit Authority of Thailand
EU	– European Union
GDP	– gross domestic product
GSZ	– Guangzhou-Shenzhen-Zhuhai
IADB	– Inter-American Development Bank
ICC	– Investment Coordination Committee
IFC	– International Finance Corporation
JBIC	– Japan Bank for International Cooperation (formerly Japan I International Cooperation Agency/Overseas Economic Cooperation Fund)
KL	– Kuala Lumpur
MRT	– Mass Rapid Transit
MHA	– National Highway Authority
NESDB	– National Economic and Social Development Board
NPV	– net present value
NSE	– North-South Expressway
PEA	– Public Estates Authority
PNCC	– Philippine National Construction Corporation
PNR	– Philippine National Railway
PRC	– People's Republic of China
PSP	– private sector participation
ROT	– rehabilitate-operate-transfer
RTA	– Road and Traffic Authority
SEM	– Societes d'conomie Mixte
STAR	– Southern Tagalog Arterial Road
TA	– technical assistance
TCA	– Transportation Corridor Agency
UK	– United Kingdom
US	– United States
WHC	– Western Harbour Crossing
vpd	– vehicles per day

TABLE OF CONTENTS

FOREWORD	i
ABBREVIATIONS	ii
LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF BOXES	vi
EXECUTIVE SUMMARY	vii
A. Context	vii
B. BOT Project Experience	vii
C. Towards Best Practices	viii
D. Prospects and Role for ADB	xiv
PART ONE: STUDY OVERVIEW	
I. INTRODUCTION	1
II. THE GROWTH OF PRIVATE SECTOR PARTICIPATION	2
A. Expansion and Contraction of Private Sector Investment	2
B. The Challenge for Private Sector Infrastructure Investment	3
III. CROSS-SECTORAL ISSUES FOR PRIVATE SECTOR PARTICIPATION	5
A. The Need for Reform and Role of Government	5
B. Institutional Reform	6
C. Strategic Planning	6
D. Legal and Regulatory Framework	7
E. Unbundling and Introducing Competition	7
F. Sources of Financing	8
G. Risk and Risk Mitigation	9
IV. SUMMARY OF SECTORAL BEST PRACTICES	9
A. Power	10
B. Water	11
C. Roads	13
D. Ports	14
E. Airports	15
V. THE ROLE OF THE ASIAN DEVELOPMENT BANK	17

PART TWO: THE ROAD SECTOR REPORT

OBJECTIVES	18
A. Context	18
B. PSP and Funding	24
C. Expressways and the Road Network	30
EXPERIENCE	35
A. Asia	35
B. Other Experience	40
C. Degrees of Success	40
III. KEY ISSUES	48
A. Expressways are Different	48
B. Attracting Traffic, Securing Revenues	50
C. Sector Policies	61
D. Identification	78
E. PSP Modalities	82
F. Legal and Regulatory Framework	89
G. Structuring the Public-Private Partnership	98
H. Financing	106
I. Procurement	115
J. Support for, and by Government	123
IV. BEST PRACTICES	125
A. Best Practices	125
B. Role for ADB and Prospects	131
APPENDIXES	
1. Case Studies	
2. Other Experience	
3. BOT Project Database	
REFERENCES	

LIST OF TABLES

Table 1:	Motivation/Attitudes of the Key Players
Table 2:	The Change to 'A New World'
Table 3:	Objectives of PSP and Funding
Table 4:	Key Issues Arising from PSP and Funding
Table 5:	Development Bank Involvement in PSP Expressways
Table 6:	Development Bank Requirements for Involvement in PSP Expressways
Table 7:	Strategic Priorities for the Roads Sector: An Example - the Philippines
Table 8:	Expressway Objectives
Table 9:	Expressway BOT Concessions in Asia
Table 10:	Project Characteristics in Case Study Countries
Table 11:	Project Financial Performance in Case Study Countries
Table 12:	Degrees of Success in Meeting PSP Objectives
Table 13:	Impact on Key Expressway PSP Issues
Table 14:	Characteristics of Power and Expressway Projects
Table 15:	Expressways - Comparison of Forecasts and Outturn Performance
Table 16:	Tariffs on Toll Roads (US cents per vehicle)
Table 17:	Characteristics of the PSP Options
Table 18:	Legal and Regulatory Responsibilities in the Case Study Countries
Table 19:	Stakeholder Analysis of Parties to an Expressway BOT
Table 20:	PSP Expressway Risks
Table 21:	Did the Agreed Price and Competition Policy Prevail?
Table 22:	The PSP Options
Table 23:	Risk Allocation
Table 24:	Role for ADB
Table 25:	Possible Impact of the Recommendations

Table A1.1:	Philippines: BOT Project Characteristics
Table A1.2:	Pros and Cons of the Alternative Tracks for Investing
Table A1.3:	Malaysia: BOT Expressways
Table A1.4:	Thailand: BOT Expressway Projects
Table A1.5:	Hong Kong, China: BOT Expressway Project Characteristics
Table A2.1:	Hopewell Holdings PRC Projects
Table A2.2:	Road Projects Submitted to EBRD for Consideration
Table A2.3:	Toll Motorway Experience in France, Italy and Spain
Table A2.4:	Australia: BOT Expressways

LIST OF FIGURES

Figure 1:	Philippines - Strategy for Attracting PSP
Figure 2:	Fuel Prices in Different Countries
Figure 3:	Toll Road Finances and Income
Figure 4:	Expressway Economic and Financial Characteristics
Figure 5:	Characteristics of the PSP Options
Figure A1.1:	Philippines - The Public Bidding Process Under the BOT Law
Figure A1.2:	Philippines Expressways - Luzon
Figure A1.3:	Expressways - Metro Manila
Figure A1.4:	Malaysia Expressways
Figure A1.5:	Thailand National Motorway Plan
Figure A1.6:	Thailand - Bangkok Region Expressway Plan
Figure A1.7:	Hong Kong, China Road Proposals - Urban Area
Figure A1.8:	Hong Kong, China Road Proposals - New Territories
Figure A2.1:	China National Trunk Road System
Figure A2.2:	Hopewell Holdings PRC Projects
Figure A2.3:	Performance of UK DBFO Projects

LIST OF BOXES

Box 1:	Past Project Finance and Future Infrastructure Demand - East Asia
--------	---

EXECUTIVE SUMMARY

A. Context

Before the Asian financial crisis, it was becoming clear that private sector participation (PSP) in the roads sector was proving problematic. The crisis has reinforced this, and brought about a withdrawal of investor confidence. There is broad agreement that countries must now develop a clear strategy, with four pillars:

- The environment for PSP must be improved.
- Government must determine sector priorities and identify a pipeline of PSP projects.
- The full range of PSP modalities must be deployed, not just build-operate-transfer (BOT).
- The procurement, implementation and operational processes must be improved.

Since the crisis, much is changing, and ADB is taking a leading role in assisting its developing member countries (DMCs). This is greatly welcomed by governments and the private sector alike.

B. BOT Project Experience

In Asia, BOT projects have been synonymous with PSP. After more than a decade of concerted effort, however, implementation experience has not matched expectations:

- Surprisingly little has been implemented — just 20 projects are operational in Asia outside the People's Republic of China (PRC).¹
- Those projects implemented have usually required substantial, unexpected government support (the crisis is bringing home the impact of contingent guarantees). Very few projects are profitable on a stand-alone basis without substantial government support.
- Projects have had unexpected adverse impacts sometimes contrary to government policy. In particular, they have led to a concentration of government support in and near the capital cities, and along existing major corridors.
- Their cumulative impact upon the problems of the roads sector has been small. Most BOT projects have been concentrated where traffic is high, and PSP has had little impact on problems elsewhere.
- There has been concern that financial objectives have been the sole determinant of what happens, to the detriment of development and social objectives.

¹ Many more are operational in PRC, which is different for known reasons — see Appendix 2.

- There has been concern that corruption, nepotism and cronyism have sometimes reduced the prospective benefits for road users.

However, much has been learned, and there have been beacons of innovation. This report brings all the international experience together, and recommends best practices.

C. Towards Best Practices

1. Need for a Process

Developing a pipeline of PSP projects in the roads sector requires government to determine a process, which comprises the following activities, at two different levels:

a. Sector Level

- Preparing the PSP environment — legal, regulatory, and contractual.
- Identifying PSP projects in the context of a transport strategy and the realistic level of public sector support necessary, both investment and contingent investment.

b. Project Level

- Preparing a business case for each project, to establish the basis for bidding, and confirm this is acceptable to government.
- Securing competitive bids and negotiations leading to bid award.
- Providing support and enforcing the concession agreement during construction.
- Enforcing the concession agreement and regulating effectively during the concession period.

The economic crisis has reinforced on governments the need for increased transparency in the PSP process, and increased rigor in project preparation since they are now faced with a better informed, and more cautious investment community. Governments are likely to need assistance until this demanding process is established both at the roads sector level and more generally in structuring the PSP environment.

2. The PSP Environment

a. Country Conditions

Not all countries are suited to PSP, and particularly to major BOT projects. PSP is likely to be favored in countries where there is:

- Political leadership and commitment to a PSP policy.
- Political stability.

- An existing income level which is not low - and preferably an income distribution which is equitable.²
- A sound macro-economy, creating increasing output and real income growth.
- Low and stable inflation.
- A stable exchange rate.
- Domestic capital markets capable of providing domestic financing.
- A program of concession projects to build private sector confidence. This will also allow the government and the private sector to spread the learning-curve costs.

The absence of any one of these features may not hinder the prospects for PSP, but a country lacking points two or three will likely struggle to introduce effective PSP.

b. Project Characteristics

Some types of projects are more likely to be implemented and financed than others. Broadly speaking, the implementation and financing challenge increases with the size and complexity of the PSP option (Table 1) and the challenge for government increases similarly.

For many countries, the entry route into PSP in roads should be through maintenance and operating concessions. This allows the private sector and government to become familiar with performance-based contracting, and offers the prospect of tackling the maintenance and rehabilitation problems, common in many countries.

The focus of most countries to date has, however, been on BOT expressways. Many of these have not been financially successful. The characteristics favoring private financing of major BOT expressways are as follows:

- Projects down existing heavily-trafficked/congested corridors, or where there are missing links in the network, e.g., estuarial crossings or tunnels. This maximizes traffic prospects on opening, and minimizes land/relocation costs.
- Inter-urban, as opposed to urban projects. This keeps the implementation problems and cost relatively low, reduces the traffic risk, and is likely to be effective in tackling traffic congestion.
- Elevated or preferably at-grade alignments in cities, and at-grade construction for interurban projects. This keeps construction costs low.

² This is important because:

- As country income increases project benefits and revenues increase proportionately, but costs much less so. The result is that project profitability increases, and the need for government support reduces.
- Conversely, low-income countries require substantial government support, yet are unlikely to be able to provide it rationally because other projects should often have higher public investment priority.
- Where income distribution is equitable, car ownership and use increases.

- Projects in middle-income developing countries, preferably with an equitable income distribution. Here the willingness-to-pay tolls and the prospects for traffic growth exist.
- Tariffs close to revenue-maximizing, and with an appropriate tariff escalation formula that allows potential revenues to be captured over time, for the main vehicle classes.
- Projects with an existing income stream, e.g., from an existing estuarial crossing/tunnel, or an existing public sector expressway. This is hugely beneficial to financing.
- A project that has been well prepared — in technical terms, in securing planning consents and in proving the feasibility of land acquisition — thereby reducing implementation risks.
- A large project, which recognizes the high fixed bidding costs associated with BOT projects.

3. Preparing the PSP Environment

Political leadership is essential. Institutions may need to be restructured, with the objectives of controlling the PSP process in the public interest, avoiding tendencies for corruption or empire building, and creating a regulatory body, separate from vested sector interests.

The core requirements are:

- Developing an acceptable PSP legal framework — the exact nature of which will be country specific.
- Securing competition *for* the market. Government should identify good projects and then subject those to competitive bidding (rather than the widespread existing practice of accepting unsolicited bids). Where unsolicited bids are accepted, they should be subject to realistic competition.
- Securing competition *in* the market. This requires:
 - Legally-binding concession agreements which set out clearly the rights and obligations of all parties, and the procedures to be followed in the case of unforeseen events.
 - Establishment of an autonomous and independent regulator which is also accountable. This is likely to be in government, but quite separate from vested sector interests.
 - Encouragement of user groups, maybe empowered through an ombudsman function, to exert pressure on infrastructure providers.
- Granting concessions only after government has determined they are clearly in the public interest, and can be revoked if this is not met.

Multi-lateral support for government is likely to be beneficial in implementation. A model that has worked well combines a multi-sector PSP Center with PSP cells in the main line agencies. The main PSP Center has the brief to assist line agencies prepare, market and negotiate projects, and is staffed accordingly.

4. Identifying PSP Projects

This is a government function, which must take place in the right institutional setting if the results are to be accepted and implemented.

Priority projects must be identified in the context of a transport (or roads) strategy,³ in a two-stage process.

a. Prepare Transport (or Roads) Strategy

This is required to:

- Be acceptable, which means that all affected stakeholders should be involved in its preparation.
- Identify the package of policies and priority projects which best promote development objectives, given an assessment of existing problems and available future public funds.
- Specifically, highlight those projects/programs which may be implemented under PSP arrangements, having regard to strategic objectives and the range of PSP options available (see Table 1).

Table 1: The PSP Options

Strategy Objective	Maintenance	Turnkey	Maintain & Operate	Rehabilitate-Operate-Transfer (ROT)	BOT	Corridor Management
New source of funds			○	○	○	○
Major capacity increase (new road)		○			○	○
Improved maintenance	○		○	○		○
Rehabilitation of existing roads				○		

³ A transport strategy is normally required for cities, and inter-urban corridors where modal competition can be effective

b. Identify Priority PSP Projects

Government must prepare feasibility studies, which will allow it to commit to specific projects. Again, the institutional setting is central to achieving acceptability, and requires the participation of the key stakeholders.

This form of feasibility study requires:

- A focus on optimizing the project specification, and delivering a project with robust characteristics. Specifically, the potential of the project to promote development, social, and environmental objectives, as well as economic efficiency, should be addressed.
- Tariff policy should be set in the light of government objectives.
- A focus on implementability and financing.
- A scope including all those activities which affect government's decision as to whether to go ahead (technical, economic, financial, institutional, legal, and land).

5. Preparing the Business Case

This is required in order to confirm the decision to let the project, and identify the terms of the bidding in the knowledge of the likely market response; hence contact with potential bidders is necessary. This in-depth analysis should:

- Establish the project financial structure.
- Identify the nature and scale of all the project risks.
- Define the balance between government support and provisions (such as defined tariffs) to secure specific government objectives.
- Allocate risks between government and the concession company. Experience suggests the allocation in Table 2 is likely to be appropriate at a general level.
- Define the provisions for unforeseen events and specify the procedures for renegotiation.
- Confirm that the proposed allocation of risks and government support are likely to attract serious bids.

Table 2: Risk Allocation

Risk	Responsibility of Government	Responsibility of Concession Company
Completion		
– Land acquisition/permissions	Ö	
– Design		Ö
– Construction time/cost		Ö
Commercial – operations and maintenance cost		Ö
Commercial – Traffic Revenue	Joint, government sharing in 'super-profits', and providing downside guarantees ⁴	
Financing	(government support)	Agreed with the banks
Devaluation and Inflation	Ö	Ö
Default and Force Majeure		
– By Concession Company		Ö
– By Government	Ö	

The Government should not normally be an equity holder in the project company, as the parties have different interests. Rather, the concession agreement should foster common views, by revenue sharing and provision for project extensions.

6. Securing Competitive Bids, Negotiation and Award

The basis for bidding follows directly from the business case. International marketing to potential investors may be necessary to maximize market interest. Success in attracting serious bidders requires the existence of an acceptable PSP process, realism in the balance of risks and rewards offered, confidence in the Government resulting from its past performance, and good timing, given the external macro-economic environment.

It is necessary to establish a clear bidding and negotiating process:

- The project requirements need to be specified closely, to ensure that evaluation of bids are equitable.
- The Government support should be defined, where necessary as a maximum - rather than held back for negotiation. This allows the private sector to prepare realistic bids, and helps to avoid failed bids.
- The Government should have access to expert advice during the entire process, from preparation of bid documentation through to contract signature. The private sector will have such advice and governments need to be equally well prepared.

⁴ This is likely to be particularly necessary for projects on green-field sites.

- There is merit in having simple evaluation criteria - for example, bidding at defined tariffs to minimize the level of government investment required since it gives transparent decisions.
- Conforming and non-conforming bids should be allowed, in order to foster private sector innovation.

Government should establish whether and to what extent PSP projects achieve value-for-money, by comparing costs with the best public sector alternative. Government should also seek to establish, through before-and-after audits, how expectations are matched by reality - as a basis for continuous improvements to the PSP process.

7. Supporting Implementation and Operations

Government should be proactive during this period, with the objective of maximizing the success of the project. Government will administer the concession contract, and regulate on an agreed basis in the public interest. When unforeseen circumstances occur, government must follow the procedures set out in the concession agreement.

D. Prospects and Role for ADB

1. Future Prospects

The potential for improvement in the roads sector is large. What may be achievable in the next 5-10 years? While every situation is different, something along the following lines will often be sought in Asian countries:

- Improvement in the PSP environment - legal, institutional and regulatory.
- The institutionalization within government of PSP procurement process and skills.
- Development, within government, of an effective transport strategy and project identification process.
- Improved preparation of BOT projects, to meet the more demanding requirements of investors.
- A widespread understanding, through education and application, of the different PSP options which can be effective in the sector.
- A progressive transfer of maintenance activity under performance-based management contracts with the private sector.
- Looking further ahead, the direction is towards greater commercialization of the roads sector. It does not seem to be unrealistic to expect the main road system to be packaged into areas or corridors, for management, maintenance and improvement under performance-based contracts. The contracts will be with private sector companies and will have required those companies to develop new skills. This will become a major private sector industry, focused on both the implementation of new projects, and the management of the road system.

2. Role for ADB

There is widespread recognition by government technocrats and private sector players, that ADB needs to be increasingly involved in this area. The government requires technical assistance to restructure and reshape policy, as well as funding and other support. The private sector requires technical assistance support to secure financing arrangements and to appreciate that ADB assistance can help government to determine sector policy. This offers encouragement for ADB policy that already exists.

The five areas for ADB assistance are to:

- Prepare the environment and procurement process for PSP.
- Broaden the understanding of the range of PSP options that exists in the roads sector. Most options are currently not applied, and they provide an undoubted opportunity, as experience elsewhere demonstrates. In particular, they tackle the problems of maintenance and rehabilitation, which underlie the problems of the roads sector in most countries.
- Assist with transport strategy formulation. This is necessary for identifying priority PSP projects. It requires coordination with other donors to create the necessary institutional setting for sound strategy development, and its widespread acceptance.
- Assist to identify priority projects for joint public-private funding (so-called hybrid projects). It is not yet clear how the different imperatives of ADB and the private sector can best be combined, when faced with an uncertain environment. Experimentation is required to establish how this is best achieved.
- Invest in projects through ADB's public and private sector windows, and where appropriate, provide guarantees. These activities are widely recognized to leverage substantial additional funds in projects that ADB has determined are sound investments.

PART ONE

STUDY OVERVIEW

I. INTRODUCTION

An Asian Development Bank (ADB) regional technical assistance was approved with the aim of developing sector specific best practices for promoting private sector participation (PSP) in key infrastructure sectors in ADB's developing member countries (DMCs). The sectors studied included power, water supply, roads, ports and airports and the best practices covered: (i) sector policy issues relating to pricing and competition; (ii) conducive legal and regulatory frameworks; (iii) the unbundling, mitigating, and management of risks; and (iv) mechanisms to reduce transaction costs. Five individual experts were engaged to undertake the study, one for each sector. A two-day regional workshop was held at ADB on 9-10 December 1998 for the experts to present their findings and validate them with an invited group of experienced senior government and private sector individuals, together with ADB staff. These volumes represent the final outputs of the study.

A summary of the expressed views in these volumes in relation to preferred forms of PSP in infrastructure, informed by the currency crisis, is that it is "best practice" to have a customer focus and a well structured regulatory environment around infrastructure projects, in part since this can allow domestic financing. In other words, it is financially and economically sensible to utilize the essential and often monopoly status of efficient infrastructure services in creating, in effect, a *customer finance* model of PSP. Under this customer-focused concession or franchise model, government provides the regulatory and legal framework that can satisfy customer and investor alike, with the securitization of customer accounts (say via an escrow account) or insurance techniques underpinning financing arrangements. Investors will always seek to mitigate uncertainties, but many of the privatization models to date have done so by way of government guarantees which have undermined the process in the longer run.

Regulation by entities appointed by the government is still required in the new model, given that monopoly provision of key network assets is often the only efficient option. For example there is a need to regulate access charges for connection to network assets such as pipelines, high voltage wires and port channels. But where competition can be achieved in the product market, as with electricity generation selling into a power pool, then this competition is generally the best mechanism to achieve good outcomes for customers. Realistically, in much of Asia, there is little experience with these new pro-competitive models of regulation and thus there is an expectation, on the part of the experts, of a substantial phase-in to this regulatory element of best practice in the future.

The challenge as we enter 2000 with its information-rich possibilities, is to learn from the 1990s infrastructure experience on investor-to-government build-operate-transfer (BOT) deals and concession transactions so that DMCs can benefit from the adoption of best practices in the various infrastructure sectors.

The following presents an overview of the study, including a discussion on the growth of private sector infrastructure investment in Asia, a review of the cross-sectoral issues, a summary of the sectoral best practices for each sector and suggestions on the role of ADB in supporting private sector investment in infrastructure. Part 2 comprises the specific sectoral report.

II. THE GROWTH OF PRIVATE SECTOR PARTICIPATION

A. Expansion and Contraction of Private Sector Investment

The last decade, and notably the period to 1996, saw both the rapid expansion of private investment in public infrastructure and a sharp increase in private management of the services associated with this infrastructure. The investment was fuelled by the development of new forms of PSP including varying forms of public/private partnerships: BOT, build-own-operate, build-own-operate-transfer (BOOT), and concessions.

New financial instruments, especially project finance, and the globalization of private investment funds, played a major role in the expansion of the infrastructure sectors in most countries. PSP in infrastructure, and in particular power generation, was supported enthusiastically by the multilateral development banks and bilateral development agencies, as well as by the international financial community. But fewer transactions were completed in the more complex and customer-focused areas such as water, electricity distribution and transport infrastructure. Early successes involved financial transactions without major organizational restructuring; later transactions focused on major infrastructure in mega-cities such as Manila, Jakarta and Shanghai. For example, water treatment plants, bulk water supply, individual power generation units, container terminals, passenger terminals, and airport toll roads.

In the first half of the 1990s, investment requirements for infrastructure in Asia were seen to be on a scale that dwarfed earlier projections and experience. Asian tiger economies were growing rapidly, and demanding massive investments in power, roads, telecommunications and other infrastructure. In most Asian economies, there was also a sense that development was being hindered by bottlenecks in power (e.g., the Philippines), transport (e.g., Thailand), water (most of Asia) and telecommunications. Since government infrastructure spending, international aid, and official sector lending could not be on a scale sufficient to meet requirements, the private sector was the focus of attention.

The new infrastructure investment requirements were estimated by ADB to be of the order of US\$1,000 billion for the 1990s for East Asia. Subsequently, they were estimated by the World Bank to be of the order of US\$1,500 billion for the decade 1995 to 2004. Such projections were useful as a means of highlighting the scale and structure of the huge infrastructure requirements of a growing and increasingly prosperous and urbanized Asia. They helped make clear the need for a major shift of focus towards PSP in infrastructure, to some extent motivated by efficiency considerations, but mainly reflecting the view that public sector financing for this scale of infrastructure requirements was neither feasible nor desirable.

There had also been a shift in views as to the comparative advantages of governments and the private sector in performing the various roles related to the provision of quality infrastructure services. Increasingly, an expanded regulatory and restructuring role was seen for governments, with investment, construction, financing, and management viewed as best opened to competitive PSP. Risks should, under this approach, be assigned to the parties best able to mitigate them, and this meant a greatly expanded role for the private sector.

There was recognition that while many private sector investments of the BOT type were being completed, the assignment of risks in many of these projects left much to be desired. Government guarantees of bulk take-or-pay contracts (between utilities and investors), often

indexed to exchange rates, had created huge contingent financial obligations of the utilities and their governments.

As with many investment trends, optimism, a proliferation of Memoranda of Understanding and glossy investment announcements gradually replaced careful evaluation. Some early successes, under special circumstances, led to the assumption that this BOT approach could be universally applied. The expression BOT had become a shorthand for PSP in many countries by the mid 1990s; but by 1999 BOTs and often the associated power purchasing agreements had also become a shorthand for unacceptable government risk exposure, and of project isolation from customer and market pressures.

This optimism ended with the Asian financial crisis; itself brought on by a lack of sound investment policies, in particular, in relation to government guaranteed power purchasing agreements. The power purchasing agreements had inadvertently converted a shortage of power supply into an oversupply, secured by take-or-pay guarantees. The result of the crisis has been a sharp contraction in private sector investment and a significant exposure of government and private sector investors to contingent liabilities. This contraction not only limits the capacity of governments to stimulate economic growth but also has led to the deterioration or stagnation of many partially completed and privately financed public infrastructure projects. The rise and fall of private sector finance is clearly shown in the private finance data presented in Box 1.

The currency crisis has caused some dramatic revisions both to economic growth forecasts and to infrastructure investment programs. However, as the analysis in Box 1 shows that while forecasts for infrastructure are lower due to lower growth and the expected move to best practice, the magnitude of investment is still huge and efficient PSP will be required.

B. The Challenge for Private Sector Infrastructure Investment

As this difficult period unwinds, it is important to re-consider the comparative advantages of the public and private sectors and the critical role of improved regulation and governance — including transparency, enforcement of contracts, and the adoption of viable commercial tariff structures. There is a need to review, sector by sector, the strengths and weaknesses of the process that has been used to implement these investments. The opportunities and risks of new approaches need to be addressed — e.g., the case for expanding the emphasis on customer focused and privately managed concessions. There is a need to develop bankable versions of these models, ideally backed by the security of customer accounts rather than government guarantees or public sector assurances. This series of volumes addresses these and other sectoral best practice concerns.

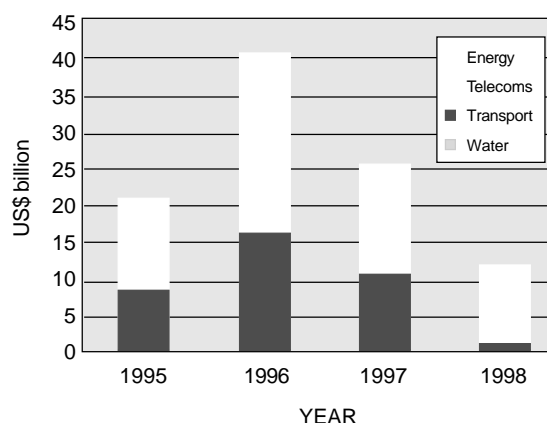
There are major challenges for governments and investors alike, emerging from this shift to a new model for infrastructure development. The new best practice model does not mean a total retreat by governments; on the contrary, moving to best or better practice involves a shift to good governance, and requires an upgrade of regulatory, restructuring, and monitoring roles. Without greatly improved governance, the shift to increased PSP could just mean monopoly powers being shifted to the well connected in the private sector. Moreover, without improved governance, PSP would eventually flounder and the demands for infrastructure will not be met, as risks would become unacceptable.

Box 1: Past Project Finance and Future Infrastructure Demand — East Asia

Project Finance — Opportunity and Volatility

Figure 1 draws on a Euromoney (Capital DATA) database and highlights the dramatic growth, and subsequent decline of infrastructure funded through project finance in selected East Asian countries. The pre-crisis level of nearly US\$41 billion for 1996, contrasts sharply with the estimated level at the end of the 1980s, when the total market for funding projects was less than US\$5 billion per annum, as well as with the crisis figure of US\$12 billion for 1998. clearly, in the 1990s and well prior to the crisis, the importance of the private sector in infrastructure development was rapidly increasing. As a result of the crisis, the telecommunications sector has shown the most dramatic decline, reflecting the fact that such projects are typically purely privately funded, and bear demand risk in a newly open environment. The energy projects, on the other hand, appear more resilient, but mainly because they have had some form of government support, in the form of guarantees in relation to bulk sales through PPAs.

Figure 1:
Project Finance

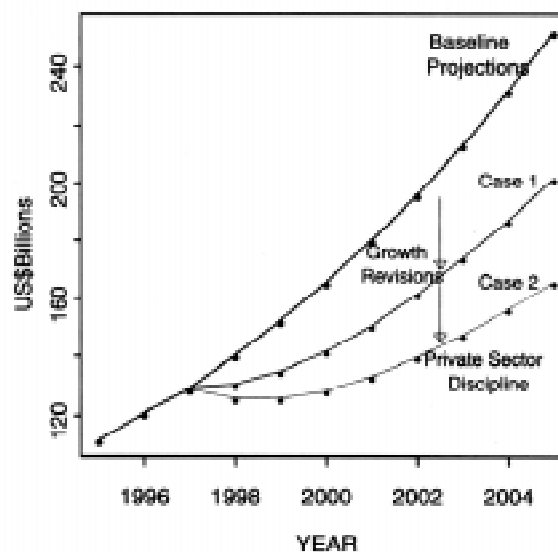


Future Demand for Infrastructure Investment

New infrastructure projections for selected East Asian countries: the People's Republic of China (PRC); Indonesia; Republic of Korea; Malaysia; Philippines; and Thailand for the period 1996-2005, adjusted to allow for both the phase-in of private sector market discipline/best practices and reduced economic growth. The revised projections are 23 percent below the pre-crisis (baseline) projections. They are based on establishing the value of the capital stock of infrastructure in each country and projecting infrastructure investments with varying gross domestic product (GDP) growth assumptions and varying infrastructure-to-output ratios. A summary is given in Figure 2. The pre-crisis projections are based on the 1996 GDP growth forecasts. Case 1 is based on the current GDP growth forecasts while Case 2 adds the impact of a transition to a lower infrastructure-to-output ratio and assumes a gradual 25 percent increase in efficiency in each sector in each country. An important factor to note in the projections for this region is that the PRC is assumed to maintain its relatively high GDP growth rate, which accounts for about two thirds of the infrastructure spending in the region. The results for Case 1 indicate a fall of 14 percent from the pre-crisis projections. If the PRC is excluded, the reduction is 33 percent. Case 2, which assumes a transition to best practices, with a resulting change in the underlying infrastructure-to-output and efficiency parameters, indicates further reductions in the level of needed investments. The analysis clearly shows the relative impact of lower growth and the potential benefits of moving to best practice models of infrastructure development. It also highlights the magnitude of investment requirements, in excess of \$120 billion per year, and the need for PSP.

Figure 2:
1996-2005 Infrastructure Investment Projections

Scenario	US\$ trillion	%
Baseline	1.78	100
Case 1	1.53	86
Case 2	1.37	77



III. CROSS-SECTORAL ISSUES FOR PRIVATE SECTOR PARTICIPATION

There are a number of cross-sectoral issues relating to promoting private sector investment in infrastructure that were identified during the study. The review of best practices in each of the five sectors highlighted the importance of competition, transparent tendering, and effective regulation. There was broad agreement that:

- Government should specialize in planning, structuring, and regulation while the private sector should specialize in management, investment, construction, and financing;
- The transfer of responsibility to the private sector should be accomplished through deregulation and open competition or well-established contractual arrangements including management contracts, capital leases, concessions, sale of assets and rights to operate;
- Economic regulation should be applied where there is insufficient competition but it should be transparent and predictable while still accommodating the concerns of the affected parties;
- Long-term domestic financing sources must be developed; and
- Commercial risks should be assigned to the private sector but other risks should be assigned according to which party is able to mitigate the risks.

The cross-sectoral issues are discussed in more detail below.

A. The Need for Reform and Role of Government

PSP in infrastructure development still requires the government to play a key role in planning, policy, and regulation. The reason that infrastructure industries have remained so long in the public sector is that they have components that are natural monopolies; e.g., the costs are lower with only one provider and the services are often essential (water, power and transport). These infrastructure monopolies also typically have a relatively high proportion of capital costs, have long-lived assets with low unit variable costs, and exhibit significant economies of scale. It had been a common judgement that state ownership of such monopolies, rather than state regulation of privately owned assets, was likely to deliver the best outcomes.

Existing service providers in these infrastructure areas have also had a considerable competitive advantage over potential new entrants, because of the relatively long time required to construct expensive new networks and to build up the market for their services. The scarcity of land, rights-of-way and airspace suitable for development of the network also act as an additional barrier to competition. Sites for airports and seaports, dams, power plants, and rightsof-way for roads, rail lines and transmission systems had become increasingly difficult to acquire. Another common argument for retaining these industries within the public sector was that they must provide common (or universal) access to their services and that subsidies are required.

It turns out that public ownership and management is neither necessary, nor the best way to ensure universal access. Subsidies can easily be a requirement of a competitive tender or can be directly financed by government. A key advantage of having the private sector provide public services is that it allows public administrators to concentrate on planning, policy and regulation. The private sector, in turn, is empowered to do what it does best (i) invest capital; (ii) manage the businesses; (iii) manage and create appropriate incentives for staff and management; (iv) deal with customers; and (v) improve the efficiency and quality of service; more recently, under the spur of benchmark competition - competition by comparison.

Governments should allow the private sector to provide infrastructure services to the maximum extent possible, with governments concentrating on planning, policy and regulation, and with the private sector on efficiently investing capital and improving the efficiency and quality of such services.

B. Institutional Reform

The organization of the infrastructure sectors (i.e., ministries, regulatory agencies, and utilities) has remained largely unchanged with the introduction of PSP. With financial transactions being the primary mechanism for transferring infrastructure services to the private sector, insufficient attention has been given to the broader issue of institutional reforms. It has been implicitly assumed that the introduction of private management into the ownership or operation of specific assets would obviate the need for such reforms. Instead, the weaknesses of existing institutional structures have limited the effectiveness of the private sector initiatives. In most countries, the piecemeal transfer of infrastructure components has proceeded slowly and the controlling bureaucracies that add overhead costs and often limit improvements in infrastructure performance, have remained relatively unaffected. The currency crisis has emphasized the importance of institutional reforms but government bureaucracies rarely reform themselves. Governments should carefully review the structure, size and responsibilities of state-owned utilities and other entities in the infrastructure sectors and establish special reform units reporting directly to top level ministers to spearhead the necessary reforms.

C. Strategic Planning

Governments' acceptance of private sector investment in infrastructure has been due, in part, to their failure to anticipate future bottlenecks and make timely strategic investments to prevent shortages in capacity. The increased role of the private sector in developing infrastructure has caused many governments to neglect their responsibility for sector planning. Instead, governments have offered assets and public services to the private sector in an *ad hoc* manner, often failing to ensure that individual investments were complementary. In certain circumstances, unsolicited proposals have been used as a surrogate for planning. For its part, the private sector has selected projects that had already been identified in government plans, giving preference to those which offered the highest rate of return, the lowest risk or the greatest short-term benefit. The private sector has had neither the interest nor the capacity to consider the network implications of its proposals. Governments have failed to subject these proposals to rigorous financial analysis to determine their sustainability in the absence of major increases in user charges or government guarantees. Governments have also often overlooked the complementary investment required from the public sector to make the private investments successful. The results have been unsolicited proposals that involved little commercial risk (government guarantees, wrap-around provisions, transfer of existing assets, granting select

rights of way) or politically generated proposals. Governments should maintain and strengthen their role in strategic planning of the infrastructure sectors and in the process identify where PSP should be encouraged and the level of complementary support that should be provided.

D. Legal and Regulatory Framework

The effectiveness of PSP has suffered from the lack of adequate regulatory structures to control both technical and economic performance. Regulation of tariffs and other economic factors is particularly undeveloped. The basic objectives of autonomy, accountability, transparency and predictability have been difficult to achieve. More importantly, the mechanism for consultation between the public and private sector and for dispute resolution between the providers and users of the network has not been fully developed. A further problem has been the failure to separate regulation from administration in order to avoid conflicts of interest. Most countries have been slow to establish autonomous regulatory agencies with independent funding and professional staff.

Unbundling the network into competitive and monopolistic components can significantly reduce the need for regulation. The competitive components can be transferred to the private sector in a way that promotes competition and allows deregulation. The monopolistic components can then be transferred to the private sector once an effective regulatory framework has been established. This regulation should create a situation where the businesses derive their profits from increased efficiency and the attraction of additional demand.

Effective economic regulation covers also deterrence of anti-competitive practices. Most of the developing countries lack laws or agencies for dealing with anti-competitive practices. Economic activity continues to be concentrated in large conglomerates. The currency crisis has provided new impetus for breaking up the monopolies and introducing anti-monopoly laws.

The lack of established legal and regulatory procedures applies to contract law as well. The means for enforcement of contracts and the resolution of disputes are not well established. Political interference in the award of contracts has also been a problem.

PSP without a well-developed legal and regulatory framework increases the level of risk to investors. It also encourages investors to rely on special situations and political relationships rather than their merits as a means for securing and implementing contracts. The transfer of infrastructure services to the private sector should not lead to privileged deals or profits secured by government guarantees. They should be businesses with regulated income streams which derive their profits from increased efficiency and the attraction of additional demand. These income streams should be capable of securing substantial private sector funding, both because their semi-regulated nature makes them much like a government bond, and because the essential and often monopoly nature of the service lowers demand risk. Such assets are also long-lived and thus attractive to pension and similar long-term funds.

E. Unbundling and Introducing Competition

Experience in a number of countries has shown that unbundled infrastructure sectors with individual components managed separately can perform better than centrally-controlled networks. The additional costs of unbundled networks due to increased communications and

transactions among components have been reduced by improvements in technology. At the same time, the unbundled management has been able to better focus on the capacity and productivity of the individual components and their interface with other components.

The unbundling of the infrastructure sectors is an important technique for reducing their natural monopoly and promoting competition. Many parts of the network can support competition. Where it is not possible to create direct competition between suppliers of network services, it is often possible to create competition among providers of complementary network services. For example, in the power sector, many countries are separating the networks into generation, transmission, distribution, and in some cases, a fourth segment responsible for retailing power to customers, with different companies responsible for each segment.

Where competition cannot be created, it is often possible to establish contestable environments e.g., a market for the business. One method is through effective competitive bidding for the sale or lease of assets and licensing or franchising of services. Another is to reduce the period of the contractual agreements or to provide for a periodic review of performance. A third is to introduce performance targets related to the quality of the service, the range of services, the prices charged for the services and overall market share. The ability of the private sector to achieve these targets is then linked to penalties, or provisions that may lead to early termination of the agreement. A fourth method is to require comparable performance vis-a-vis other networks. This may be in the form of requirements for increasing market share relative to other providers of similar services, or requiring a quality of service and price that is comparable to other networks serving similar markets.

Most infrastructure sectors are composed of profitable and unprofitable components. One practical, but not ideal, strategy for transferring the components to the private sector is to bundle profitable and unprofitable components to produce a combination that has an acceptable level of profitability. Another is to tender the profitable components through techniques ranging from operating agreements and franchising to sales of assets and to transfer the unprofitable components using management contracts; in effect, bidding out the government support for that component. A third strategy has been to transfer the profitable components to the private sector and to retain the unprofitable components in the public sector, but under control of local government units rather than the national government.

F. Sources of Financing

Private sector funding of infrastructure usually brings the risk of foreign currency mismatches in the financing package; income is in local currency, but the need to resort to foreign debt and equity markets means that debt service requires substantial foreign currency. The root problem is inadequate depth in capital markets in most DMCs which prevents a tailoring of local currency debt to long-lived assets. The need to resort to foreign debt (and equity) creates substantial risks, which have been exposed in the recent crisis. Few infrastructure consortia can withstand an exchange rate depreciation of 40 to 50 percent, let alone the 80 percent decline experienced in Indonesia when their product is sold for local currency. Hence the priority on programs to deepen the domestic capital market.

In principle, currency matching requires that the bulk of debt funding of infrastructure services such as transport, water supply, electricity and other urban services should be in local currency. In the absence of the necessary capital market reforms, it is hard to see how private

sector provision of infrastructure can proceed on the scale required to meet future demand. A priority, therefore, given the recent experiences, is that international development agencies such as ADB expand their role both in facilitating political risk insurance and in fostering the development of domestic capital markets in Asia, particularly bond markets.

Direct foreign investment will remain an important source of funds for the development of the infrastructure sectors. However, it will take time to restore investor confidence and, given the experience of Indonesia, Pakistan, Philippines, Republic of Korea and others, governments will naturally seek to limit their exposure to these funds in preference to local sources of capital, if possible. The development of domestic long-term capital markets will be critical for private sector investment in infrastructure, but these markets must have much better regulation as well.

G. Risk and Risk Mitigation

In order to reach financial closure, governments have often accepted commercial risks that should have been assigned to the private sector. This includes not only the foreign exchange risk but also demand/traffic (volume) risk. The most obvious example has been the take-or-pay provisions in power purchase agreements. These guarantees have had three negative impacts. First, they have isolated the private sponsors from the influences of the market. Second, they have created a large amount of contingent liabilities for governments that now add to their fiscal problems. Third, they have encouraged price rigidity leading to distortions in the market and reducing the potential of the private sector to improve efficiencies in investment and operations. Other examples are build-lease-transfer agreements and volume guarantees for toll roads, airports and seaports.

Because governments have had limited contract-related knowledge or experience, the private parties have been frequently able to convince them to assume some of the commercial risks. Also, because governments have often not been able to engage suitable legal, technical and financial experts to assist during negotiations, they have been at a disadvantage in arguing with foreign proponents concerning international practices such as take-or-pay contracts, or with international lenders concerning guarantees to protect their loans. Bureaucrats who have gone through a long, often contentious bidding process have been willing to accept some commercial risks during negotiations rather than to face rebidding. Alternatively, private parties frustrated with drawn out negotiations and the continuing renegotiating of clauses have accepted risks that should have been borne by the government.

Governments should build up capacity to negotiate and deal with the private sector. Commercial risks should be assigned to the private sector and other risks should be assigned to the party best able to mitigate them.

IV. SUMMARY OF SECTORAL BEST PRACTICES

The challenge for governments is to encourage an appropriate form of private sector investment in infrastructure. The study has identified significant differences among the infrastructure sectors concerning the appropriate balance between private and public participation in ownership of assets and provision of services. Only some of the sectors have well defined models for PSP. Other best practices are still evolving and the menu will continue to develop as experience grows. The decisions on which infrastructure components should be

transferred to the private sector are of a strategic nature. They depend not only on the characteristics of the sector and the market it serves but also on government objectives. There was consensus among the experts that the primary objective should be to benefit consumers. However there were a number of additional objectives which governments should consider: (i) reduction in national debt; (ii) stimulation of domestic capital markets; (iii) reduction in capital and operating subsidies; (iv) investment in new infrastructure or rehabilitation of existing infrastructure; (v) improvements in the quality of service; (vi) increased range of services; (vii) reduced prices for services; (viii) client-oriented operations; and (ix) more effective marketing.

Governments have at their disposal a number of means for effecting the transfer of infrastructure components to the private sector. The pace and sequence of such a transfer depends on the: (i) size and complexity of the infrastructure sector; (ii) rate of growth in demand and the competitiveness of the market; (iii) options for unbundling by function or geography; (iv) legal regime regarding ownership of land and other critical assets; and (v) capacity for economic regulation. The established mechanisms, which range from management contracts to unregulated competition, are not new and have proven effective. The key is to have a vision of where the sector is going, and to carry through the reforms as quickly as possible so as not to allow the interim change to become the final state of affairs. The findings of the sectoral experts for each sector are summarized below.

A. Power

In the electricity sector, IPPs provided a quick solution (in the Philippines, for example) by offering generation capacity needed for rapid economic growth. However, the costs were often high because the new capacity was not consistent with the least-cost expansion path and the private sector required high rates of return. However, these costs have been decreasing as the IPP market has matured. The focus on production rather than efficient distribution put the public sector in the position of retaining that activity in which it was least effective and restricting the private sector from performing the customer focused activities (distribution and supply) where it had real expertise. At the same time, it isolated the private sector from the market through a combination of regulated pricing and guarantees against commercial risks.

The power sector expert advocates restructuring to achieve a competitive market model with wholesale and retail competition. Such reform will encourage sustainable PSP and maximize the benefits to consumers. The expert suggests five major steps in implementing this approach, and their order of precedence. To some extent, these steps may proceed in parallel, but they should be considered sequential actions that will lead to the implementation of a competitive power market:

1. Getting the investment framework right.
2. Deciding on the goals of restructuring and the ideal industry structure.
3. Preparing the players to participate in a competitive market.
4. Privatizing existing and new assets.
5. Ensuring that the competitive market is implemented properly.

Best practices for power sector restructuring would include the following:

- Create an enabling legal and regulatory environment to support competitive markets in electricity.
- Unbundle the power sector into separate generation, transmission, distribution, and possibly retailing sectors to achieve the maximum benefits for customers.
- Privatization should include the sale of power distribution utilities as well as generation, and should include existing assets as well as new projects, using a transparent process.
- Open access to transmission and distribution wires, and the ability to trade power between buyers and sellers in an open market, are critical to achieve a competitive framework.
- Operate the generation and retailing markets competitively, with a large number of generators selling into a wholesale electricity market at prices which balance demand and supply throughout the day.
- Operate the transmission network as a concession on the basis of competitive bidding, or privatize it within a tight regulatory framework, controlling rates of return, prices or gross revenue.
- The independent regulator should mainly oversee prices and incentives for transmission and distribution operations.
- Restructuring should proceed at a pace consistent with the development of a competitive and unbundled system.

B. Water

The water sector has moved more slowly towards private sector investment, relative to electricity and telecommunications for example, not least because of the jurisdictional, environmental and sensitive social concerns about water supply, and its affordability. While major private sector involvement has now been achieved in distribution (Manila and Jakarta), the bulk of transactions were BOT models with take-or-pay clauses guaranteed by governments. Adding to these difficulties was the lack of knowledge about the location and condition of the (underground) networks and aquifers in many countries.

The volume on the water supply sector addresses the question of why, given the alternatives, the private sector should seek to invest in a sector with so many uncertainties, natural, governmental and financial. Water, unevenly supplied as rainfall, is often wrongly deemed a free public good, despite the costs of treatment and retail supply. Thus, there is often an ill-informed community constraint against private sector involvement in water supply, which in most countries has prevented the sorts of best practice referred to in this report.

The water expert makes the point that when it comes to best practice in the case of water supply, most of the messages are for government — to install sound and independent regulatory regimes, catchment management policies and enforceable laws on tariff setting and collections. Once in place, best practices such as water supply concessions can be

implemented. If not in place, then best feasible practice may simply relate to contracting out some services under government guarantee, or BOOT bulk supply to public sector water supply companies. It follows from this that since the particular features of the water supply situation and regulatory and privatization policies differ greatly across countries, so, too, will the feasible best practice.

One misunderstanding regarding the scope for bringing commercial practices to water supply is the issue of affordability. The report notes that the poor often pay more for water than the cost from efficient commercial piped supplies. Experience has shown that low-income families will pay for quality water supply – and are not averse to PSP – if it delivers.

The key points recommended were:

- The benefits of PSP in the water sector must be explained to win public acceptance.
- The starting point in any reform process for water supply is to form a high-level reform unit to drive and manage the process. It would be responsible for coordinating and facilitating the entire reform and PSP process. The reform unit may be a crosssectoral unit.
- While not essential to commence reform, the introduction of tradable water rights leads to efficient use of water, particularly when it is scarce and has alternative uses.
- The water sector should be unbundled to the extent possible. The private sector concession model is most likely to achieve the greatest benefits to the community and the economy as a whole. The government continues to own the network while the private operators lease the long-term right to use the assets and collect revenue from service delivery. The benefits accrue due to strong financial incentives to reduce water losses and expand service.
- If politically difficult, then the next best strategy is to use BOT, BOOT, and rehabilitate-operate-transfer arrangements to bring expertise and finance to urgently required water supply projects. The bidding procedure should be carefully managed to ensure reasonable cost and the contractual arrangements should not constrain subsequent progression to more competitive models.
- Commercialization/corporatization of water supply utilities together with tariff reform is advantageous as an interim step if the introduction of PSP is to be phased.
- Tariff reform to achieve full cost recovery is essential for PSP. Cross-subsidies for the poor can still be considered in a transparent manner.
- Critical to the success of PSP in the water supply sector is for the government to create sound and independent regulatory regimes, catchment management policies, and enforceable laws on tariff setting and collection.
- Risks are likely to vary between countries and even between different water utilities in a country. They should be managed by the party best able to minimize and manage each risk most effectively. Where no party has a clear comparative advantage to manage the risk, it should be shared.

C. Roads

In Asia's roads sector, PSP has been equated with major BOT toll roads. These have been targeted where traffic is greatest – in and near the capital city and sometimes along major inter-city corridors. This private investment has produced some successes but also many failures. After more than a decade of concerted effort, implementation experience has not matched expectations. Indeed, surprisingly little has been implemented outside the PRC.

The road sector expert has advanced three reasons for modest progress in roads. First, governments have not defined their policy, often leaving the private sector to identify projects. Secondly, almost everyone involved has expected such toll roads to be profitable without government support, but this has only rarely proved to be the case (outside the dense PRC market, which is deemed a 'special case'). Thirdly, it has proved difficult to introduce promised tariffs and tariff increases in a sector where roads have become to be regarded as free.

What is clear is that private construction and maintenance of public roads produced better results where there was adequate competition and effective methods for enforcing contracts. Efforts to substitute private sector management for public sector officials in the management of the public network are in their early stages, even in the developed economies, but the preliminary results are encouraging.

Worldwide experience identifies a broad range of PSP modalities, in which BOT is close to being the most difficult to implement. Other modalities include maintenance management contracts, turnkey, operate, and maintain or rehabilitate-operate-transfer concessions. Many of these modalities target improved maintenance, and rehabilitation of the network (rather than solely network capacity expansion). They have potentially much greater application than BOT projects. Looking ahead, the requirements are to both improve the BOT process, and to extend the modalities that are applied. The key points to emerge are:

- Governments must prepare the PSP environment. Institutions may need to be restructured with the objectives of controlling the PSP process in the public interest, and creating a regulatory body, separate from vested interests. A sound legal framework and a predictable regulatory regime are essential.
- Governments must identify priority PSP projects. This will almost always require an independent feasibility study, which focuses on traffic and tariff policy, project staging, network integration issues, risk allocation, finance and implementation issues.
- The best prospects for BOT projects are in middle-income countries (where the willingness-to-pay tolls exist) along existing congested corridors, or where there are missing links (e.g., estuarial/river crossings). A regulated income stream from a tolled public toll road is capable of securing project financing of an appropriate kind (i.e., suitable to pension funds and other long-term investor groups).
- Private sector modalities other than BOT exist, e.g., concessions, and should be applied more widely, as they can address many of the sector problems, and in the process create a new high growth industry for transport management companies.

- Traffic risk is the major risk and may be shared. The core risk being taken by the private sector, with government taking a share of the upside benefit and providing a downside guarantee in the event of low traffic.
- Transparency and competition are essential in the procurement process.
- Government support should be defined upfront as a maximum so that the private sector can prepare realistic bids.

D. Ports

In the port sector, the transfer of cargo-handling activities to the private sector has been, in most cases, extremely successful in replacing inefficient government bureaucracy with commercially-oriented management. Improvements in productivity and maintenance has increased the quality of service. However, where there was no competition, these arrangements were less likely to sustain these improvements. Private investment in port infrastructure has generally been limited to new and existing cargo terminals. Trans-shipment terminals were the most successful, since they were less dependent on local markets and land transport. Greenfield ports were slower to develop because they were further from their markets and the transport access was less developed. Basic infrastructure offered few opportunities for full cost recovery.

The ports sector expert, noted that the private sector has always been actively involved in port affairs. The land and water transport services that use the port are almost entirely private sector. Nearly all of the cargo shipped through ports is privately owned. The private sector provides an array of complementary trade facilitation and logistics services for this cargo. Within the confines of the public port, cargo owners, forwarders, and ship agents actively participate in decisions concerning the handling and storage of cargo. The public sector's role is to own, develop, and manage basic port infrastructure and common-user facilities.

The process of port privatization has rarely involved pure privatization, since land and infrastructure are rarely sold. Instead, the process involves PSP in operations and investment in equipment and facilities. The process is not a monolithic effort because of the diversity and complexity of ports and the services they provide. It can be divided into three components: (i) institutional reform, (ii) divestiture of existing services and assets, and (iii) investment in new facilities and services. These can be implemented individually or in combination. For each port component, there are many possible public-private partnerships. The main points regarding moves to best practice were:

- The bidding process should encourage unbundling not only of the network but also for the services within the ports. Where ports are not financially viable, they should not be bundled with profitable ports, but treated as stand-alone facilities that are turned over to local government or put under management contract using a competitive tender.
- The landlord model is the best structure for promoting PSP because it accommodates different forms of public-private partnership while recognizing that the only fixed responsibility of the public port is the ownership of the site.

- The most effective and efficient procedure for promoting PSP in the port sector is to lease existing facilities with relatively short-term agreements that allow for reorganization and improvement in productivity. Subsequently, concession agreements can be used to encourage private investment in additional capacity. Where this capacity is required immediately, or labor problems make it difficult to lease out existing facilities, then concessions might precede lease agreements.
- Continued public investment will be required, as it is difficult to recover the costs for basic infrastructure in a time period reasonable to the private sector. Public investment may also be required to reduce the barriers to entry. This is important where a new entrant would otherwise have to make a large investment before competing with existing service providers.
- The best form of tariff regulation is market regulation; the second best is through the terms of the contract that identify the non-competitive services requiring regulation, state the maximum rates, the formulae for escalating these rates over time, and the arbitration procedures for discriminatory behavior in excess of that justified by commercial pricing. The third best is the establishment of a regulatory agency outside of the port which would apply a pricing formula related to cost recovery. All of these are preferable to a vague procedure for negotiating future changes in tariffs.
- The private sector should assume all commercial risks. Other risks should be negotiated, based on which party has the capability to mitigate the risk.
- The critical element in any effort to promote PSP is competition, or at least the potential for competition. This can be provided through direct competition between private sector service providers, between public and private service providers or between bidders in the case of an activity that does not allow competition.

E. Airports

For the airport sector, PSP in terminal operations produced significant improvements in financial performance and the quality of service. Private sector investments have increased substantially over the last five years. During the previous twenty years, there was little capital investment in airports, despite a five-fold increase in traffic. The airports coped with the higher levels of traffic through a combination of larger aircraft, better air traffic control, improved runway design, and the addition of second runways and additional terminal space. This period has now ended and most countries need to invest in new airports. These are proving to be costly, complex and often controversial investments.

The key policy questions concern how best to structure airports and groups of airports to obtain maximum customer benefits. The discussion in the volume on airports and air traffic controls indicates that there is little evidence of significant scale benefits flowing from multiple airport operation; equally, however, there is little evidence of significant scale diseconomies. The case for significantly reducing the concentration of airport ownership at privatization therefore depends on the trade-off between the up-front and visible costs of re-structuring, and the possibly less tangible benefits of increased competition resulting from break-up. The competition benefits in this industry are not clear-cut, primarily because major airports mainly serve distinct regional markets.

In the United Kingdom, the authorities took the view that any potential competition gains from breaking up the British Airport Authority prior to privatization would have been offset by restructuring costs. In Australia, in contrast, the Government has preferred to restructure and reduce industry concentration radically, emphasizing the public policy benefits of inter-airport competition for long haul international traffic. The benefits of fragmented ownership also include those that flow from yardstick competition, enabling regulatory agencies to assess individual operator performance more effectively; and from introducing a limited element of competition by emulation between operators. The airport expert found the benefits from the Australian model to be greater. Key recommendations for the airport sub-sector are as follows:

- Airport privatization will be encouraged by the existence of legislation in the form of a BOT law or similar, signaling the government's recognition of the need for PSP in infrastructure provision. It is also important to ensure that the government is able to demonstrate that any projects offered to the private sector are economically viable.
- Regarding the optimum approach, full privatization based on asset transfer or acquisition through long-term leases is preferable to more restricted forms of PSP (but is also more demanding in terms of legal and regulatory frameworks).
- As to airport industry restructuring, there is no evidence of significant economies of scale in airport operation other than those associated with increased traffic density at a particular location. Hence, PSP can be based on individual airports (although facilities may need to be bundled to assist financing of major new developments or extensions to capacity).
- The existence of unprofitable airports does not justify the maintenance of a highly concentrated industry structure to facilitate cross-subsidies.
- Limited sharing of traffic and revenue risk (between the private sector partner and government) is justifiable in airport BOT or concession contracts.
- Denomination of some, or all, airport charges in US dollars is an effective way of hedging against currency risk and may significantly reduce the risk premium required by private investors;
- The benefits of PSP in airports are likely to be maximized by regulatory frameworks that incorporate good regulatory governance practice. The price-cap approach to constraining airport charges is likely to encourage better performance outcomes than one based on rate of return regulation.
- Competition for the market, whether through sale or leases, or BOT/concessioning, will be maximized by transparent bidding/sale processes.

V. THE ROLE OF THE ASIAN DEVELOPMENT BANK

The crisis has focused on the urgent need for institutional strengthening and governance reforms in both the financial and infrastructure sectors, areas where ADB can play a major role. There are a number of ways identified in the study in which ADB can assist in the reforms associated with increased PSP in infrastructure. The most obvious is to provide technical assistance to define policy objectives, develop network master plans, identify and evaluate projects, define the role of new regulatory institutions, and train regulators to handle their new responsibilities, prepare contracts and negotiate with the private sector. ADB's efforts to promote financial sector reform and develop long term capital markets will also be important. This would include efforts to improve the bankruptcy laws, and the regulation of domestic debt and equity markets.

In order for ADB to have a significant role in promoting PSP, it should link this promotion with on-going project lending. ADB can provide support for private sector investment directly through its private sector window and through its guarantee operations. More importantly, ADB should provide sovereign loans to complement but not compete with private sector investment in the form of public-private partnerships. Public sector project lending should also be used to finance basic infrastructure that cannot be packaged into financially viable investments for the private sector but provides significant economic benefits and improves sector efficiency. Program lending is another key modality to promote the necessary reforms where ADB provides financing for the adjustment costs in stages, upon the satisfactory achievement or fulfillment of government actions that will promote PSP and sector restructuring. This modality allows ADB to exercise some leverage on government decisions and actions to support reform. Country strategies should address which areas of development are to be financed by government using sovereign loans, general revenues and government bonds and which are to be financed by private investment and should ensure a coordinated approach to all forms of ADB assistance.

PART TWO

ROADS SECTOR REPORT

I. OBJECTIVES

A. Context

1. Objective of the Report

This report develops best practices for promoting private sector investment in the roads sector. Originally the subject matter was expressways. *Expressways* are defined in this report as: access-controlled roads capable of providing a high level of service, with a capturable revenue stream. Subsequently, it was decided that the report should incorporate the whole roads sector, since much potential exists for private sector participation (PSP) other than expressways. In practice, the report focuses on the main road network, which attracts reasonably high traffic flows, and may either be tolled or subject to 'shadow tolls' (by which payment is made to the concessionaire on the basis of the traffic — but without collecting payment from motorists directly).

The report is set out as follows:

Chapter I – Defines the objectives of PSP, and the objectives for the roads sector, as a basis for measuring 'success'.

Chapter II – Reviews experience - in Asia and elsewhere, and establishes the degree of success that has been achieved to date.

Chapter III – Identifies the key issues, which provide the basis for defining best practices.

Chapter IV – Defines best practices, draws conclusions, and identifies the role for the Asian Development Bank (ADB).

2. The Demand for Investment

The context for this technical assistance is that the demand for infrastructure investment in Asia is much greater than the public sector can finance (given macro-economic lending constraints and the willingness of people to pay - and government to collect - taxes). Funding by the private sector is therefore necessary.

The World Bank (World Bank, 1995) estimated the indicative infrastructure investment requirements for Asia for 1995-2004.⁵ The transport sector demand was estimated to be about US\$500 billion. The proportion of transport sector funding represented by the roads sector was not defined, but would represent the majority. Assuming it is 60 per cent, the demand for investment in the roads sector would be about US\$350 billion, or some US\$35 billion per year. This sets the scale of the challenge.

⁵ This was done as part of major research into the infrastructure sector, which was the theme of the *1994 World Development Report*. The estimates are based upon World Bank country and sector specific reviews and on a quantitative modeling exercise.

3. Key Issues Facing PSP in the Roads Sector

It is important to start from a viewpoint of realism. Four factors identify the dimensions of this and point to the challenges that must be faced:

- For 15 years, Asia's press has been inundated with articles on build-operate-transfer (BOT) projects. But despite the rhetoric, the record of projects completed is — with a few exceptions — small. Instead, the experience has often been frustrating for those concerned. There has been few benefits for road users and few profits for participating companies.
- The experience of implemented projects has been mixed - some good, and some not so good. The objective should be to secure private sector investment in the public interest. These last four words are crucial — for private sector investment alone may not be desirable. This report probes how PSP can deliver investment in the public interest.
- In Asia, this subject has to date been confined to so-called BOT projects⁶ — usually very large new infrastructure projects. This is not the case elsewhere — notably in Latin America, where lower cost approaches have been implemented widely. This report will conclude that the potential for PSP in Asia will be realized only when these other PSP approaches are applied. This report therefore considers all such options.
- The attitudes and motivations of the key players determine what happens in practice, and it is important to commence here (see Table 1).

⁶ BOT is used here as the generic name for major projects implemented under private sector concessions.

Table 1: Motivation/Attitudes of the Key Players**Governments⁷**

- Politicians want the physical result: an expressway (and are often little concerned with its traffic/benefits).
- A 'cargo cult' mentality: BOT projects - a cost-less solution which happen without major government effort.
- Expressways can be built without acquiring land.
- Infrastructure makes money - the easy solution.
- All BOT projects are a good thing.
- BOT a substitute for transport policy (capacity expansion is the core policy objective).
- Once a concession is let, it is up to the private sector to make it a success (no active government support is necessary).
- Reluctance to contemplate tolling existing free roads.
- concern to keep tolls affordable to road users.
- Reluctance to give up control, and concern to protect government jobs.

Project Sponsors/Developers

- Belief that a combination of purposeful action, good connections, and some technical/financial work can: (i) secure government approval for a new project and (ii) result in effective implementation.
- Primary objective for contractor members is short-term construction profits, and an acceptable exit strategy once the project is operational.
- Interest in future business prospects in the country (growth in profits come from spreading start-up costs over enlarged networks).
- Focus on maximizing revenue capture from tolls.

Financial Institutions

Their concerns are:

- the downside risk - bankers have no upside;
- to put a floor under the risk - and get others to take the risk below this.

Their requirements are:

- strong government commitment to private sector policy;
- an adequate legal framework, as a precondition;
- adequate procedures for project development (planning consent, environmental, land acquisition etc) are essential;
- sound business plan;
- government to have access to world-class consultants, contractors, operators;
- forecastable (reliable) project financial risk profile;
- acceptable allocation of risks, and where necessary government support;
- equity to be fully committed.

Community Groups

- Power of the anti-toll and anti-car lobby.
- concern that the alignment protects sensitive areas.
- concern that environmental and social policies are not circumvented - re: land acquisition! compensation/relocation.

7

In the early stages, many of these views are widely held by domestic financial institutions and project sponsors/developers too.

4. The Sustainability Agenda

Experience demonstrates the importance of the right transport policy. Transport is central to delivering prosperity and the quality of life to which most countries aspire. This is because the impacts of transport policy are pervasive. Policy may impact on economic performance (and therefore incomes); on the shape and structure of human settlements through its impact upon physical development and economic structures; on the distribution of income (and therefore the balance of winners and losers, and on poverty); and on the environment (and hence on the quality and enjoyment of life).

Transport policy can become a catalyst for creating synergy in public policy, delivering a wide range of benefits, or its failure can create bottlenecks and frustrate the best-prepared plans. Transport policy is central to the sustainable development that forward-thinking leaders increasingly recognize as essential. Yet a review of the performance of the sector in ADB's developing member countries (DMCs) shows that all is not well, and that this potential is rarely being realized.

It is concluded that this shortfall in performance is substantially a failure of the traditional system of government-led planning, implementation, and regulation. This is manifest by ineffective and under-investment, and by the failure to tackle effectively the scale and diversity of problems that face the sector. This is firstly an institutional problem, and secondly a failure of transport policy; yet many believe that the solution lies in more government funding and more projects.

The decades ahead pose new challenges for transport policy. Two are fundamental: (i) it is increasingly recognized that policy must be sustainable — planning must be for the long-term, as well as for tomorrow and the day after; and (ii) markets must increasingly set the transport agenda of tomorrow, to meet the diverse and changing needs of consumers and producers — partly the result of global competition, and because of limitations on future public funding. New challenges need to be met too - the need to develop intermodal transport chains, tackle rapidly increasing urban transport problems, address the predicted large increases in motorization, reduce the large and increasing toll of traffic-related deaths and injuries, and address the profound concerns associated with increasing air pollution.

How do we 'meet the needs of the present without compromising the ability of future generations to meet their own needs'?⁸ The World Bank has published its conclusions after a substantive review of policy (World Bank, 1996). There are three strands to the answer: (i) *economic* sustainability, this recognizes that economic growth is a valid objective of society; which must go hand-in-hand with (ii) *social* sustainability, the problems of poverty and protection of the disadvantaged are central to the sustainability agenda; and (iii) *environmental* sustainability — congestion, pollution, sprawling development and the exhaustion of resources all threaten a sustainable future.

⁸ This is the definition of sustainability commonly adopted, from *Our Common Future* (The Bruntland Report), World Commission on Environment and Development, Oxford University Press, 1987.

Competition is the key to promoting efficiency in the sector, and economic sustainability requires the creation of competitive markets (competition *in* or *for* the market). This is a central task of government, and it poses critical problems for a government not experienced in the skills of light regulation - of how to regulate in the public interest. When 'the prices are right' scarce resources will increasingly be allocated efficiently, cost recovery will improve, and the sector will become increasingly attractive to the private sector. In short, the imperative of a sustainable transport policy goes hand-in-hand with the funding imperatives for the transport sector.

The global change to 'A New World' provides the driving force behind the new transport strategy. Its characteristics are summarized in Table 2.

Table 2: The Change to 'A New World'

Characteristic	'Old World'	'New World'
<i>Policy Objectives</i>	Promoting economic growth Reducing poverty	Promoting economic growth Reducing poverty Protecting the environment Improving the status of women Supporting human development
<i>Planning Timeframe</i>	Short/medium term	Short/medium <u>and</u> long-term
<i>Driving Forces</i>	Public sector management/funding	Private sector skills/resources and public sector policy making, regulation, facilitation restructuring procurement
<i>Forms of Intervention</i>	Investment in projects	Capacity building/institutional restructuring Policy reform to create competitive markets Investment in projects

This future will be very different from the past, and requires a new transport policy agenda. The changes may be expected to take 10-15 years to complete, and once embarked upon are likely to be irreversible.

Central to the sustainability agenda is that increasingly, users must pay for the (improved) services they receive - there is no other way to fund the sector. But because of problems in collecting tolls, the roads sector is unlike others - charges for use are currently rare.⁹ There are two options for funding the sector:

- The introduction of direct user charges - as with tolled expressways.
- Increasing gasoline and diesel prices, such that they incorporate a specific user charge, which is earmarked for sector investment.

Technology will increasingly allow user charges to be brought into line with use, although this will take time before it can be applied to developing countries.

⁹

People's Republic of China (PRC) is a notable exception. Until the recent reforms, PRC did not have a good intercity road network - inter-city trade and travel was mainly by rail. A new road network is being created and financed through the incremental application of tolls to finance construction and maintenance.

5. Learning from Experience

This phase of PSP and investment in infrastructure is relatively new - and only dates back to the mid 1980's; so everyone is on a learning curve. The purpose of this technical assistance is to facilitate 'jumping up' the learning curve, by drawing on experiences elsewhere, in the context of the future imperatives of transport policy.

Much that we see today is relatively crude, and there is surprisingly little innovation in Asian PSP in this sector, while some examples are clearly problematic when measured against the public policy objectives described. This should not be a surprise or a cause for undue concern — providing purposeful steps are taken to improve the situation, in recognition of the scale of the problem, and the urgency required. The Asian economic crisis is providing that spur to improvement, and this study is required to define a strategy, and open up the possibilities, for such purposeful steps to be taken.

6. The Asian Economic Crisis

How can investor confidence be regenerated, post-crisis? The starting point is to understand the cause and impact of the crisis. Arguably it is a failure to deliver productive private sector investments in this (and other) sectors that is a contributory cause of the crisis.

The capital cost of a typical BOT project is huge compared with the scale of public funding in the sector:

- BOT expressway projects typically cost US\$0.25 billion - US\$1 .0 billion.
- The annual public investment in the whole transport sector (roads, rail, ports, airports) in developing countries is low - in the Philippines it is just US\$1 .2 billion.
- This highlights the importance of good BOT projects which massively increase sector funding.
- But even a few BOT projects, which do not deliver expected benefits, become a dead weight, and can affect the ability of the national economy to grow.

The current crisis has huge implications for the future, and should be seen as both a threat and an opportunity for future Asian PSP strategy in this sector.

a. The Threat

It is paradoxical that there is a huge investment shortfall that the private sector is required to meet; yet the impact of the crisis is very likely to be a reduction in sector funding. Bankers expect little new risk investment for the next three years. The following responses to the crisis are taking place:

- Government transport infrastructure budgets are being cut, due to reduced economic growth, and increased priorities for social spending in the short-term.
- Project costs are increasing in domestic currency terms, as currencies have depreciated.

- Traffic and revenues are stagnating, and forecasts are being revised downwards —due to expected lower economic growth and incomes.
- The prospects for project finances to be supported by property deals, have been undermined by weak property markets.
- Many private investors have been badly hit by the shock. There is more caution from the private sector in respect to BOT projects.
- Some governments are only now realizing their liabilities under concession contracts. Combined with concerns for the macroeconomy, they too are more cautious.

b. The Opportunities

If the right steps are taken, investor confidence will be re-established. The next five-year period is the time when concerted action is required:

- It provides the opportunity for government to create the necessary PSP environment. This is already happening.
- Investors are now forcing a much more rigorous appraisal of projects than hitherto.
- It is at times of crisis that peoples' minds open up to new ways of doing things.
- The crisis reinforce the need for a change of focus to include lower-cost/higher-impact PSP modalities, as well as massive BOT infrastructure projects.

The crisis, therefore, provides a window of opportunity for the governments of Asia's developing countries, and for ADB to assist them in the transition towards 'The New World'.

B. PSP and Funding

1. PSP Objectives

Experience shows that there are two broad reasons for embarking on PSP:

- Because the government's imperative to do something is not matched by the reality of the public finances - and private funding is the only option (sometimes too it is seen as the easy option, and therefore the obvious course to follow - particularly as most people seem to think that infrastructure makes money).
- Because PSP is seen as the better way, leading to sector efficiency, and funding its natural consequence - but not necessarily its principal objective.

Today, most countries fall into the first category. In Europe, the United Kingdom (UK) has broken out of this thinking, and in Asia, Hong Kong, China; has done likewise. Worldwide, the development banks are leading the argument and assisting their DMCs in the transition to the second category - recognizing that PSP is the better way. In Asia's developing countries there are many individuals who are leading this change in mindset, but there is a long way to go before the true rationale for PSP is understood and believed.

Part of the reason is that PSP is seen by many in the public sector as a threat, both institutionally and personally. These attitudes are understandable, and need to be addressed in the context of strong political leadership — which is increasingly taking place.

Many are also asking whether the balance between economic objectives and social/environmental impacts has been addressed? What are the social equity and environmental implications of the PSP policy - and more to the point, should existing policies be changed to target these concerns?

With this introduction, Table 3 defines a framework which allows the success or otherwise of PSP *in the public interest* to be assessed, and Table 4 identifies key issues arising from PSP policies.

Table 3: Objectives of PSP and Funding

Objective	Comment
1. POLITICAL	
Implement something.	The politicians' imperative - to deliver a physical project (maybe with little interest in usage/benefits), resulting in earlier implementation than would otherwise be possible. In some environments PSP is required because of the pervasive failure of the public sector.
Create an entrepreneurial class/group,	To preserve social cohesion (a valid objective). or To favor one group over others (maybe corruptly, or for reasons of nepotism).
Allow public funds to be allocated to other priority sectors, and/or reduce taxes	By securing private sector investment in the transport sector.
Technology transfer	Involve foreign financial institutions, consultants, contractors and operators.
2. ECONOMIC EFFICIENCY	
Better travel conditions for road users.	Reduced congestion and more predictable journeys: on the expressway, on the existing roads. Quality infrastructure facilitating international and multi-modal logistic chains, for global competition.
Better decisions, by making risks explicit.	Requires: Comprehensive approach to risk assessment, and allocation of risk to those best able to control! insure against risk. Willingness of government to provide guarantees. Transparency of process in the event of failure.
Improved implementation performance:	
• Faster	Preparation and construction faster.
• Lower-cost	
• More predictable	Preparation, bidding and construction costs lower.
Innovation	In many aspects: project identification, PSP modality, new sponsor groupings with a different focus, design/construction, tariffs, financing, procurement, marketing.
Increased public sector productivity	Impact of PSP on public sector performance through example and/or competition.
3. SOCIAL	Pursue social equity objectives by: Maximizing the catchment area of projects. Identifying options for targeting low-income users. Ensuring acquisition/relocation follows due process.
4. ENVIRONMENT	Pursue environmental objectives by: Ensuring that PSP does not distort development strategy. Guard against sub-standard planning and design (e.g., excessive elevated structures, severance, etc.). Ensuring acquisition/relocation follows due process.

Table 4: Key Issues Arising from PSP and Funding

Issue	Comment
1 Private Sector's Ability to Identify and Implement projects	Are they able to do this, in the absence of strong government action?
2. Ability to Introduce/Increase Tolls	Need for 'free' alternative? Location of tollgates critical? Can tolls always be introduced? Are promised toll increases delivered? Avoidance of 'leakage'
3. Macro-economic Effects Crowding out other investment	Scale of private investment relative to size of domestic capital market.
Foreign exchange exposure	Percentage of off-shore financing, scale of recent devaluation, willingness of government to provide forex guarantees.
Misallocation of Resources	Economic returns on projects funded by the private sector?
4. Development of Domestic Capital Markets	Do new financing instruments developed for infrastructure financing have spin-off benefits for the economy?
5. Road Network Development Pace of network development?	Ability to learn from experience?
Does the private sector assist - or constrain network development?	Extensions to existing projects? Private sector development of a network? Development of an integrated network?
6. Impact on Development and Transport Strategy	What objective – benefits for through traffic, or corridor/area development?
Concessions may constrain and/or distort strategy, by concentration on the major corridors	May concessions form a 'straight-jacket' to public action? Is there a concentration in capital cities? Potential for distorted transport/development strategy? resulting from the scale of public investment necessary to make private sector projects profitable? Reinforcement of inefficient megablocks, and concentration down existing corridors?
7. Social/Environmental issues Concessions may affect the application of social and environmental policy	Are social equity and environmental concerns addressed? Impact on land acquisition and relocation. Are due processes circumvented? Visual impact, Severance etc.
8. Development of Road Transport Companies	Shortage of companies motivated to manage roads for the long-term.
9. Procurement	Treatment of unsolicited bids? Securing competition. Requirement for detailed project specification. Bidding requirements.
10. Implementation	Traffic disruption? Failed projects?
11. Political	Fear of foreign 're-colonisation', fear of loss of government jobs.
12. Role of International Financial Institutions	This is minimal — why?

2. Development Bank Policies

During the course of the technical assistance, meetings have been held with ADB, the World Bank, The European Bank for Reconstruction and development (EBRD) and the Inter-American Development Bank (IADB). Their involvement in private financing of infrastructure is detailed in Table 5.

Table 5: Development Bank Involvement in PSP Expressways

Bank	Lending to the Public Sector	Public Sector Investment	Private Sector Guarantees	Investment in Private Xway projects
ADB	Yes	Yes (equity & lending via Private Sector Group) and co-financing	Yes - Partial credit and partial risk	1 project in Thailand ¹⁰
World Bank Group	Yes	Yes (International Finance Corp. (IFC) – equity and debt, quasi-equity and financial risk management products incl.	Yes - against political risk and to match debt duration to project requirements	2 in Argentina, 1 in each in Mexico, Colombia & Brazil
EBRD	Yes	Yes	Yes	2 in Hungary
IADB	Yes	Yes and co-financing	Yes	2 in Brazil, 1 each in Colombia, Panama, and Uruguay

Development banks have broadly similar policies towards private sector investment in infrastructure. These are strongly supportive, subject to requirements being met concerning:

- The importance and priority of the project. This should be compatible with the country strategy and (if this exists) sector strategy.
- The preparation of the project. The project must be technically sound, must meet economic, social and environmental requirements, and must be institutionally and financially sustainable.
- The procurement of the project. This concerns confirming that the benefits of competition are realized, either by providing competition directly, or by checking prices against best practice.
- Specifically, there is a major concern that PSP does not engender corruption. Bank policies are targeted to counter this.

All of the Banks like to appoint (at the expense of the concessionaire) an independent engineer. These requirements are demanding. This is because the decision to implement such projects is often a big decision — projects typically have major impacts and major opportunity costs; and it should not be surprising that demanding requirements need to be met.

The policies of the banks in these respects are summarized in Table 6.

¹⁰ ADB is involved in various stages of appraisal and loan processing for other projects, including: Ciawi-Sukabumi (Indonesia - suspended); Guangzhou-Zuhai (dormant); Delhi Bridge (India - active: ADB would invest US\$5 million equity and lend US\$20 million of a US\$100 million project); Pasig Expressway (Philippines - active), Chaing Rai Laos-Kunming (active).

Table 6: Development Bank Requirements for Involvement in PSP Expressways

Development Bank Requirements	ADB	IFC	EBRD	IADB
Compatible with country/sector strategy	Must see that governments are committed & have political will to fulfill contractual obligation	Requires government commitment	Must have transition impacts & fall within a coherent, sustainable national transport policy	Government must approve & country regulatory system must not compromise project feasibility
Technically Feasible	Yes	Yes	Yes	Yes. New projects, expansion & rehabilitation all eligible. Re-financing/asset transfer excluded
Economically Viable	Yes	Must benefit local economy	Up-to-date, state-of-the-art traffic & revenue study by independent international consultants & suitable EIRR. Benefits to local & international economy.	Not specifically
Environmental Impact Assessment	Yes	Yes	Yes & public participation also required	Yes
Institutionally & Financially Sustainable	Investment in private sector of a DMC. Majority of equity owned & operation controlled in private sector. Does not support projects whose success is tariff protection or government investment dependent	Must have good prospect of being financially viable	Appropriate legal framework, state guarantees, mitigation measures in case of government actions materially & adversely affecting the concessionaire & insurance. Must demonstrate bankability on reasonable set of assumptions. 20% equity required	Borrower must be established company within the law of the country in which investment is to be made. Majority of shares must be held by national of IADB member countries
Limits on Bank Exposure	Not more than 25% of total cost or US\$50m whichever the lower	Usually limited to 25%. Up to US\$1m for small & medium sized projects US\$100,000 - US\$1m & from US\$1 to US\$100 m for standard size projects	Will normally limit exposure to 35% of total project cost.	Share of the project not more than 25% of the total cost or US\$75m.
Competition for the Concession	Must improve the environment for private sector development. Must be awarded on competitive & transparent basis	Not necessary	Beneficiary considered to operate in a competitive environment if equity partner was selected in a transparent, competitive tendering process.	Not necessary

C. Expressways and the Road Network

1. Road Network Priorities

The importance of the road network to delivering national social and economic objectives is rarely matched by the performance of government in providing infrastructure of the right quality and quantity. These problems are often not marginal, but reflect a fundamental failure over a prolonged period, and frequently after repeated assistance from development banks.

The problems in the Philippines are just one example (Allport, 1998, op cit):

“The core problem is institutional, in that the Department of Public Works and Highways (DPWH) is not sufficiently proactive in maintaining and developing the national road network. The symptoms of this problem are many: there is no strategy for the sector, with priorities for what to do, how, where and when; there is a patchy picture of maintenance, some good but much that is not good; planning is substantially ineffective; design and construction are often poor, with lengthy construction times, which reduce estimates of economic viability, and the performance of some contractors is questionable; and there are still large areas with network deficiencies.

The causes are understood. First and foremost, politics intrude very extensively in the sector. This has almost completely subverted the planning and implementation process. The road investment and maintenance budgets are approved annually by Congress, and are under constant uncertainty. In addition, funding is spread far too thinly, leading to patchy and insufficient project implementation. As a result, DPWH has found it increasingly difficult to develop and implement a clear, coherent strategy, and to deliver what it is mandated to deliver. Moreover, funds for national roads are allocated by DPWH to regions according to a ‘block allocation’ formula - a system that does not meet actual engineering needs or stated physical policy objectives.”

This is a common story throughout the developing world. It is paradoxical that side-by-side with this profound failure - which impacts upon virtually the whole national road network, massive new BOT expressway(s) monopolize the attention - projects which typically make only a small addition to the network.

It is necessary to establish an overview of the sector needs and priorities, before concluding that major investment in new expressways is justified. To continue the previous example for the Philippines, the priorities for the current plan period (1999-2004) were established (Allport, 1998 op cit):

Table 7: Strategic Priorities for the Roads Sector: An Example - Philippines

Category	Description	Required Scale of Expenditure
Maintenance	Routine and periodic	Substantial
Rehabilitation	Reconstruction of the road structure	Substantial
Improvement	Upgrading pavement design/bridges for heavier traffic	Substantial (most of the network)
	Road widening/realignment and junction improvements to increase capacity	
	Bypasses to avoid traffic bottlenecks	
	Safety improvements	
Development (Penetrator) Roads	New roads to stimulate development (agriculture, mining, tourism)	Small/very small
Missing Links	New roads. Priority to port/airport access roads	Small/very small

2. Development and Transport Strategy

Roads are not an objective in themselves, but a means of providing accessibility, and thereby achieving economic, development, social and environmental objectives.

Table 8: Expressway Objectives

Objective	Impact of Road Investment
Economic efficiency	Improved accessibility by reducing congestion and increasing capacity — accommodating increased traffic. Improved allocation of resources, by introducing user charges.
Development	Development is encouraged in one area/corridor over another.
Social	Impact on the poor/disadvantaged as a result of land acquisition/relocation/construction. Impact on accessibility for the poor/disadvantaged. Impact on traffic accidents.
Environment	Impact on sensitive areas. Impact on severance, visual intrusion, air pollution and noise.

Expressways typically have one or more of the following objectives:

- Link town A to town B more effectively (improve the accessibility of A and B), or
- Develop the corridor A to B (or develop an expanding area in a city/region).

They may have subsidiary objectives to:

- Relieve existing town centers of through traffic, particularly trucks, and
- Improve access for low-income travelers.

Roads have a huge impact upon the physical development of a city or region. If a road is built, then development is widely observed to follow it; by comparison if it is not built, or not improved, then development takes place much more slowly. Over a period of one or two generations these changes have a profound impact upon the structure of a city or region.

The starting point is to ask 'What (city or sub-regional or regional) development strategy is road investment required to assist in bringing about?' Given such a development strategy a transport strategy needs to be formulated. This will determine the priorities for road investment, in the context of economic and social objectives and environmental, funding and institutional constraints.

Not all roads are a good thing. They may profoundly distort the development of a city, cause unjustifiable dislocation or destroy habitats, or create major operational problems. Many transport corridors comprise other modes too, and the transport strategy needs to determine the right balance of investment and policies. Ill-founded road investment can undermine such a strategy.

In summary, road investment will only be effective if carried out in the context of an acceptable development and transport strategy. We return to this issue later in the report, and review the way that Asia's governments have sought to use expressway investment to further their policy objectives.

Suffice to say now that typically expressway studies are undertaken (expressway meaning here limited-access grade-separated high-capacity roads) in a vacuum, without:

- A meaningful development strategy (defining the objectives of transport strategy).
- A transport strategy (defining the roles of roads, rail, buses etc. and identifying which corridors should incorporate expressways).
- A realistic assessment of available public funding.

Instead, an expressway network is typically developed and recommended, almost always a hugely ambitious network, which assumes that the private sector will somehow fund it. The result is that government is led to believe that this can - and should happen, whereas neither is the case.

3. Towards Commercialization

Before becoming involved in the detail, it is helpful to look forward - say 25 years, and to have some perspective on the direction of change in the roads sector. This is already becoming apparent, and is best described as 'commercialization'.

The roads sector is different from other infrastructure sectors, because it is not commercial. Users of telecommunications or electricity or ports or railways or airports pay for their use – and the more they use, the greater the payment. The same is true in many countries (where water is metered) for water. But it is not so for road transport. Drivers pay annual licenses to use the roads and gasoline/diesel has a large tax element - but these payments are

neither recognized as payments for access/use (governments take the proceeds into the general fund), nor do they vary with cost (the basis of economic pricing). Thus, while a telecoms company offers price discounts to encourage off-peak traffic and a price supplement at peak times when users willingness-to-pay is high, there is no price mechanism in the roads sector, solely congestion - the great leveler, affecting everyone, those with valuable and those with trivial journeys, equally.

Progress to full commercialization is speculative, but is increasingly discussed as a possible development in the sector (most recently in Roth 1996). Roth describes the basic components of a commercial road system, which would substantially remove government from the business of planning, financing, implementing, managing, operating, and maintaining the road system as:

- There would be owners.
- They would be financially self-supporting.
- Revenues would go to those who earn them, not to governments.
- They would operate to common standards to facilitate inter-connection.

One possible approach is described:

- The national road system would be geographically divided into sectors.
- Ownership would be vested in road corporations.
- Road corporations would manage and operate the sectors.
- New private corporations could be formed to provide new roads.
- The road corporations would be regulated by government to safeguard the assets.
- Income could be from user charges supplemented by tolling which would be dedicated to a roads fund.
- Revenues would be distributed between road corporations on a traffic-related basis.

Implementation steps are suggested:

- Bring about institutional reforms — the main obstacle to reform.
- Introduce 'shadow tolls' - which enable new road providers to enter the market and shoulder some of the major risks.
- Establish dedicated road funds.
- Develop electronic methods of charging for road use (already advanced).
- Government to be responsible for creating a competitive market for roads, ensuring consistent technical and safety/environmental standards.

4. PSP Modalities

The typical PSP modality for Asian expressways has been that of BOT — new construction undertaken and financed in the private sector with operation and toll collection to secure financing over a 20 to 30 year period, after which the asset returns to government. This has been used in all of the case study countries and dominates thinking within the Asian transport sector.

There are other options for involving the private sector however, which allow differing transfers of responsibility and risk and can be appropriate when the government is concerned to ensure contract stability and economic viability of the project. These other forms of contract can also be useful in developing private sector capacity to undertake activities which had previously

been in the public domain and where the public sector contract management skills are still under development.

Not all of these forms of contract require tolls to be levied, since less financial responsibility is being transferred away from the government. Where tolls are levied, depending on the revenue derived and the obligations of the private sector, payments may be made to the government.

These options can also be used where there is an existing road or network of roads, and the government is seeking to improve maintenance or to rehabilitate the road (and yet not bear the cost or associated risks).

The full spectrum of PSP modalities in order of risk transfer to the private sector are as follows:

- **Maintenance Management Contracts** — the private sector maintains an existing road under performance specifications, for which it receives payments from the government.
- **Turnkey Contracts** — the private sector designs and constructs a new road, to government specifications, and receives a fixed payment on completion.
- **Operation (tolling) and Maintenance Contracts** — the private sector maintains the road to agreed standards, and collects tolls from users which finance the maintenance.
- **Rehabilitation, Maintenance and Operation** — the private sector undertakes significant rehabilitation works to bring the existing road to agreed standards, maintains it to those standards, and collects tolls to finance both rehabilitation and maintenance.
- **BOT** — the private sector undertakes and finances design, construction, tolling, and maintenance, usually of large infrastructure projects. The private sector can also bear much of the risk — depending on the negotiated concession agreement.
- **Corridor Management Contracts** — the private sector undertakes new construction and the maintenance (or rehabilitation) and operation of existing facilities. It allows government and the private sector to consider the roads on a corridor or network basis.

These options are described further later in the report.

II. EXPERIENCE

This section reviews experience in Asia and other parts of the world, before drawing conclusions about the degrees of success that have been achieved.

In Asia the focus is on: Hong Kong, China; Malaysia; Philippines; and Thailand - case study countries which offer experience and insights to guide future policy. Appendix 1 describes these in some detail.

Appendix 2 describes other relevant experience, which highlights examples of interest or innovation.

A. Asia

1. BOT Expressway Projects

Table 9 summarizes the BOT activity in Asia - this is a summary of more detailed project information provided in Appendixes 1, 2, and 3.

After a decade of effort, and huge rhetoric, there are just 20 operational projects, with a further 32 under construction (see Table 9).

When set against the problems, this is a surprisingly short list. One country, Malaysia, dominates and represents one-half of total activity, while seven countries have negligible activity in terms of construction and operational projects.

There are a large number of projects being planned or at pre-planning. This covers everything from serious pre-bid activity to little more than pre-feasibility assessment. Before the recent economic crisis, the realism of many projects was questionable. Now many such projects are dormant.

The types of project vary by country. In Thailand and the Philippines the projects are concentrated in the capital city, and the radial roads leading from it; while in Malaysia the projects have been used to help open up the country, with a mix of urban and inter-urban projects. In Hong Kong, China; the project finance capital of Asia, is notable in that all projects have been (or in the case of Route 3, incorporated major) tunnels.

The obvious questions that follow in the light of huge problems and the limited amount of activity to date are:

- How can the BOT process be improved, to deliver more projects?
- Are there other options to BOT, which may be more effective?

Table 9: Expressway BOT Concessions in Asia

Country	No. of Projects by Project Status						No Projects by Type		
	Open	Construction	Plannng	Pre-Planning	Abandoned	Total	Urban	Inter-Urban	Bridge/Tunnel
Bangladesh	-	-	1	-	-	1	1	-	-
Myanmar	-	-	-	-	-	-	-	-	-
Hong Kong, China	4	1	-	-	-	5	-	1	4
India	-	-	11	4	-	15	2	9	4
Indonesia	2	6	7	20	-	35	11	23	1
Lao PDR	-	-	1	-	-	1	-	1	-
Malaysia	9	15	8	8	-	40	18	19	3
Pakistan	1	-	3	-	-	4	-	4	-
Philippines	- ¹¹	5	9	1	-	15	9	6	-
Sri Lanka	-	-	1	-	-	1	-	1	-
Taipei, China	-	-	-	-	-	-	-	-	-
Thailand	4	5	2	1 ¹²	2	14	11	3	-
Viet Nam	-	-	-	1	-	1	-	1	-
TOTAL	20	32	43	35	2	132	52	68	12
PRC ¹³	21	-	11	3	-	35mostly inter-urban, including several bridges			

Notes: Based upon the consultants' database of BOT projects-Appendix 3 reproduces summary informatio

The information is comprehensive - apart from PRC, where the picture is complicated by many deals and arranged projects. For PRC the projects known to the consultant is summarized.

¹¹ Excludes the Manila North and Manila South Expressways, constructed in the 1960/70's, for which an operating franchise was awarded.

¹² Includes the national motorway project as a single project, of 4,150 kms.

¹³ Information for PRC is not comprehensive - see text.

2. Alternative (non-BOT) Examples of PSP

For reasons that are not obvious, there has been a fixation with massive BOT projects in Asia, with very little interest in other, lower-cost forms of PSP. The only examples we are aware of are:

- In Hong Kong, China, management contracts have been let for government tunnels (Aberdeen, Lion Rock, etc).
- Also in Hong Kong, China, the Tsing Ma Control Area management contract has been let, to manage a single major corridor (leading to the new airport), and featuring an innovative traffic control system.
- In Pakistan, it is intended to sell the operating concession for the Lahore-Islamabad expressway, the project having been constructed under government funding (via a Korean contractor).
- Management contracts were let 20 years ago for the Manila North and South expressways. The contractor was required to levy tolls and maintain the road, until the capital cost was amortized (after which it was to revert to government, and tolls were to be removed).

3. Case Studies

Appendix 1 reports on the case studies for Hong Kong, China; Malaysia; Philippines; and Thailand; which were effective in illuminating the key issues. These built on a working knowledge of the countries and sector, supplemented by a study tour, which benefited from the assistance of many individuals and organizations.

Table 10 summarizes the project characteristics:

- The case studies include 17 of Asia's 20 operational BOT projects, and 20 of the projects under construction (these figures exclude PRC for which information is incomplete, but where activity is extensive).
- All countries have plans for major future programs. Malaysia, which has 18 projects open or under construction, plans to double this network. This points to the scale of activity in the sector - and it reinforces the embryonic stage of development almost everywhere else.
- More than half the projects are urban. This is very different from Western Europe, where such projects are uncommon.

Table 10: Project Characteristics in Case Study Countries

Parameter	Philippines	Malaysia	Thailand	Hong Kong,	Total
Projects by Status¹⁴					
Operational	0	9	4	4	17
Construction	5	15	5	1 ¹⁶	26
Planning	9	8	2	-	19
Pre-Planning	1	8	1	-	10
Total	15	40	12¹⁵	5	72
Projects by Type					
Urban (elevated/at-grade)	9	18	9	0	36
Bridges/ tunnels (urban)	0	3	0	4	7
Interurban (at-grade)	6	19	3	1	29
Total	14	40	12	5	72
Projects by Route-kms					
Operational	0	1,189	183	10	1,382 ¹⁸
Construction	169	734	189	10	1,102
Planning	545	694	66	-	1,305
Pre-Planning	270	202	4,150 ¹⁷	-	4,622
Total	984	2,819	4,588	20	8,411

Notes: Figures are approximate. Some projects are large and comprise many sub-projects in different stages of preparation - see case study Appendix 1.

Route-kms estimated from information presented in Appendix 1, with guestimates where information is lacking.

Table 11 summarizes the financial performance of these projects. While some of the estimates are the consultant's rough estimates, they do point to the magnitudes, which is our sole purpose:

¹⁴ At the time of the Study Tour, April 1998.

¹⁵ Excludes 2 abandoned projects: Hopewell and Klong Saen Sep.

¹⁶ The Comprehensive Transportation Study (CTS-3) is ongoing. This will identify the priorities, and the form of procurement.

¹⁷ The planned national motorway system, linking Bangkok to the provinces.

¹⁸ Includes Malaysia North-South Expressway of 848kms.

Table 11: Project Financial Performance in Case Study Countries

Parameter	Philippines	Malaysia	Thailand	Hong Kong, China	Total
Operational Projects	0	9	4	4	17
Cost US\$ billion	na	4.4	2.6	2.5	9.2
Private funding US\$ billion	na	3.3	1.9	2.1	7.1 (77%)
Private funding at risk US\$ billion	na	0.8	1.9	1.9	4.6 (50%)
Direct ¹⁹ public funding US\$ billion	na	1.1	0.7	0.4	2.1(23%)
All projects	15	40	15	5	75
CostUS\$billion ²⁰	6.6	21.5	19.9	3.4	51.4
Private funding US\$ billion ²¹	4.0	12.9	9.9	2.9	29.7 (58%)
Private funding at risk ²² US\$ billion	2.6	8.6	10.0	0.5	21.7 (42%)
Direct public funding US\$ billion					
Foreign Funding US\$ billion ²³	3	1	10	2	16 (31%)
No. of projects profitable on stand-alone basis? ²⁴	0	2-3	0	1-2	3-5

4. Operational Projects

The 17 operational projects cost about US\$9 billion of which about three-quarters was privately funded, and one-quarter direct government funding (i.e., in cash or kind). However, only part of this is true risk capital: all in Hong Kong, China; most in Thailand; but very little in Malaysia (where banks have been underwritten by government, and there has been government support for concessionaires when things go wrong). Probably only one-half of the total cost is risk capital.

5. All Projects

These 75 projects would cost about US\$51 billion of which about 60 percent would be expected to be privately funded, and 40 percent direct government funding (i.e., in cash or kind). However, of this no more than 40 percent of the total is true risk capital. About one-third overall would be foreign funding. This varies very much by country, it is negligible in Malaysia, but high in the Philippines (for example, Skyway was virtually all foreign funding).

¹⁹ Direct - meaning intended in cash or kind. Government may have contingent liabilities which get called when project finances go wrong.

²⁰ Based on substantive information, pro-rated for missing information, and converted to US\$ at existing (post-economic crisis) exchange rates.

²¹ Consultant estimate, based on knowledge of many of the projects.

²² With existing BOT process.

²³ Consultant estimate based on available information.

²⁴ The revenue sources are predominantly tolls (plus small ancillary concessions, advertising). The costs are: bidding, design, land, construction, equipment, maintenance, asset replacement together with dividends. This profitability criterion asks whether the revenues will fund the operating costs, repay debt and provide a reasonable return to shareholders - without government support.

Perhaps the main conclusion, and one that underpins this subject, is that few BOT projects are intrinsically profitable - meaning that their revenues fund all their development, capital, operating and asset replacement costs and provide an acceptable return to shareholders. It is estimated, based on discussions with government, concessionaires and banks, and from observation and analysis that no more than three to five of existing BOT projects in the case study countries are truly profitable.

B. Other Experience

Appendix 2 describes relevant experiences in the remainder of the world. This is selected to provide insights relevant to future policy not available from the case studies.

In Asia the focus is on:

- PRC - because of its importance, and because it is different (expressways are often profitable).
- The Indian Sub-continent - because of its importance, and because it is currently at the lower end of the income range, and yet is actively pursuing BOT policies.
- Indonesia - because of its importance, and because it has been active in realigning its policy to the requirements of the post-crisis world.

Elsewhere the focus is on:

- Latin America - because there has been much lower-cost innovation.
- Eastern Europe - because it too is different, and has lessons from applying BOT policies.
- UK - because it has been a leader in this field, and has pioneered the design-build-finance-operate (DBFO) approach.
- France, Italy, and Spain - which have all developed large expressway networks, but have had to progressively involve Government.
- United States (US) - which has a large expressway network, and has innovated.
- Australasia - Australia which is actively pursuing a BOT policy, and New Zealand which has pioneered re-engineering of the government machine to improve management of the roads, and is moving to introducing user-charges.
- South Africa - which is also developing major expressways through a BOT policy.

C. Degrees of Success

1. Overview

This section bring together the Asian and other international experience, to:

- Assess its degrees of success in meeting the objectives for expressway PSP defined in Table 12.
- Summarize what has been learned concerning its impact on the key issues set out in Table 13.

a. Asia is Different

It is clear that in two respects Asia is currently different to other regions of the world: there is an exclusive concentration on BOT to the exclusion of other forms of PSP; and there is a concentration on urban projects. Asian countries have generally planned huge expressway systems on the basis of optimistic growth assumptions that some countries have indeed achieved, on the assumption that they represent a sound basis of transport policy. This has been done almost uniformly without attention to public sector affordability, because the projects were expected to be profitable for the private sector.

By contrast, in Latin America, PSP policies have been devised against a background of severe economic problems - what has been implemented has been that which could clearly be afforded, and often they were assisted by the World Bank or IADB. Urban hierarchies are different too - with many large cities, whereas many Asian countries are primate, with activity dominated by the capital city and the roads radiating from it, and lower levels of traffic on the inter-urban road network.

Western Europe has virtually no urban expressways, partly because of public concern about their acceptability, and partly because of a recognition of their lack of merit in contributing to sustainable transport policy; while large inter-urban expressways have been developed by both the private and public sectors, but mostly requiring substantial public sector support.

In Eastern Europe, pressure for expressways comes from Western Europe which is both their role model, and political objective. For the European Union (EU) has invested hugely in its peripheral lower-income member states, to reduce income disparities; and there is an expectation that as the EU expands, the countries of Eastern Europe will benefit from similar investment in infrastructure.

The United States has been slower to get onto the BOT bandwagon because of the interstate highway system, which has created a highly developed inter-urban highway network since the 1950s, and because of the social backlash against urban expressways in the 1960s and 70s. Hence, little new construction was considered until the 1980s when urban radial roads were beginning to be considered to relieve traffic congestion. However, there remains little interest because: the projects are still very political; there were early failures (e.g., Dulles Tollway); and perhaps because of the difficulty of US employment law which does not allow government funds to be spent on projects which will put existing government units out of business.

Table 12: Degrees of Success in Meeting PSP Objectives

Objective	Examples of Degrees of Success
1. Political	
Implement something	Achieved on a massive scale in Mexico (unsuccessful), and Malaysia (mixed experience). Individual projects implemented with difficulty, e.g., Don Muang Tollway (Bangkok), Skyway (Manila). General conclusion is that the private sector is limited in what it can achieve, without strong government (this refers to: its ability to plan, purchase and clear land, award necessary permits, and get political acceptance of the scheme).
Create an Entrepreneurial Class/Group ²⁵	Preserves social cohesion: a major objective of PSP in Malaysia, to develop a bumiputera entrepreneurial class. This has been achieved. Favors to one group/relatives may be an objective of politicians — achieved in Indonesia for example.
Allow public funds to be diverted to other priority sectors, and/or reduce taxes	A major objective of PSP in Hong Kong, China achieved.
2. Economic Efficiency²⁶	
Better travel conditions for road users	This is substantially achieved on inter-urban routes. Expressways in cities alone do not do this - Bangkok, Seoul and Tokyo all have large but extremely congested expressway networks. Relatively few trucks use expressways, contrary to expectation (and presumably policy): Hungary M1/M5 is an example.
Better decisions, by making risks explicit	Undoubtedly so, but difficult to prove. See the Hungary M1 and M5 case studies for example — Appendix 2.
Improved implementation performance (faster, lower-cost and more predictable)	The sector has traditionally been characterized by long delays before construction, and prolonged construction periods. Where the BOT system works well, implementation is faster and lower-cost. Hong Kong, China and Australia are examples. Otherwise PSP almost certainly improves construction times (e.g., Malaysia). Its impact on cost however depends upon procurement, particularly the existence of effective competition.
Innovation	There are many examples of innovation, some very important: Non-BOT forms of PSP: Argentina, New South Wales, and Hong Kong, China. UK DBFO - shadow tolls, new forms of risk allocation, new 'players' and innovative project types. Tariff innovation, providing stability, guarantee of increases and allocating risk - Hong Kong's Toll Stability Fund. Targeting the lower-income: Malaysia where bus tolls are less than a car and where provision is made for motor-cycles. Financing: Kuala Lumpur, Hong Kong, China - where projects are listed on the stock exchange. Marketing BOT projects to users - Tate's Cairn Tunnel, Hong Kong, China. Construction techniques - Manila Skyway. Multimodal linkages - Hopewell in Philippines: expressway to port/power station.
Increased <u>public</u> sector productivity	New South Wales management contracts, which have developed into a partnering approach.
3. Social	ADB focusing on maximizing the social benefits by increasing the catchment area of expressways in PRC. Malaysia provides concessionary tolls for buses, and provides facilities for mc's. But these are isolated examples of providing for lower-income groups. The evidence is that BOT projects do not circumvent government guidelines for land acquisition/ relocation.
4. Environment	BOT projects certainly distort development strategy, reinforcing existing undesirable trends. BOT projects are often elevated, causing visual and severance problems.

²⁵ May be a valid objective of policy, or be a corrupt transfer of national resources to private individuals/groups.

²⁶ Only exceptionally, are before and after studies available.

Table 13: Impact on Key Expressway PSP Issues

Issue	Impact ²⁷
1. Private Sector's ability to identify and implement projects	<p>Achieved notably in Malaysia, with strong government commitment, and proactive private sector.</p> <p>This is however the exception - many times the approach has failed to deliver projects efficiently: UK Birmingham Northern Relief Road, Bangkok Don Muang Tollway, and Hopewell are examples.</p> <p>It has also failed to develop 'good' projects — witness Bangkok's competing expressways.</p>
2. Ability to introduce/ increase tolls	<p>PRC is an exception - tolls readily used, acceptable, often no realistic free alternative. But in other countries:</p> <p>Tolls are always difficult to introduce e.g., Thailand.</p> <p>A free alternative is normally required by government.</p> <p>Concessionaire's and government objectives are in conflict.</p> <p>The location of tollgates very sensitive: Mozambique-South Africa N4, KL Cheras, Mexico are examples.</p> <p>Toll increases are almost uniformly subject to political interference: in Thailand, Mexico, to some extent Malaysia, and until the Toll Stability Fund, even Hong Kong, China.</p> <p>Undoubtedly PSP reduces 'leakage', which is common with government projects.</p>
3. Macroeconomic effects:	<p>Yes in Mexico: crowding out domestic markets and requiring foreign funding, with disastrous results.</p>
Crowding out other investment	<p>Maybe an issue in Malaysia, where the scale of investment relative to market size has been large.</p>
Foreign exchange exposure	<p>Mexico demonstrated the crippling impact of devaluation on unprotected project finances.</p> <p>A major current concern in the wake of recent devaluations, emphasising the importance of domestic financing.</p> <p>Certainly a concern in Thailand, Philippines, Malaysia.</p>
Misallocation of Resources	<p>Where much has happened quickly, there is particular concern that economic internal rates of return (EIRRs) are poor or mixed. Certainly so in Mexico, mixed performance in Malaysia, concern in Thailand.</p> <p>Many projects have questionable EIRR's, with traffic much less than estimated.</p> <p>Because investment costs are very large relative to the roads sector budget (yet lots of rehabilitation and maintenance is needed on existing roads), the opportunity cost of misallocation is large - reducing future economic growth.</p>
4. Development of Domestic Capital Markets	<p>The hypothesis is that PSP may develop new financial mechanisms and products, with widespread benefits. No evidence was obtained one way or the other, except perhaps in the stock market floatations in Malaysia and Hong Kong, China.</p>

²⁷ Reference should be made to sections 4,5 and Appendix 2 for detail.

Table 13: Impact on Key Expressway PSP Issues (continued)

Issue	Impact
5. Road Network Development Pace of network development? Does the private sector assist - or constrain network development?	Where much is done quickly, there is little opportunity to learn from mistakes — Mexico and Malaysia are examples. No evidence that private groups are developing strategic networks — except Malaysia where Renong are prominent in the transport sector. The existence of government toll roads with no clear policy for toll increases can undermine BOT projects: Hong Kong, China's tunnels are an example. There should be concern that expressway projects do not cumulatively become an integrated network, unless tolling equipment is standardized. In Hong Kong, China there are 2 technologies, in Sydney 3, in Malaysia 2. Institutional conflict creates great problems in Thailand where the projects of several agencies 'compete'. One result is the abandonment of Hopewell.
6. Impact on Development and Transport Strategy Concessions may constrain and/or distort strategy, by concentration on the major corridors	When concessions are let (often without construction taking place), and in the absence of clear policy, the result can become a straightjacket, which constrains future government action. This describes Bangkok — almost every corridor has one or more BOT projects. High land prices and the attempt to find profits result in BOT projects concentrating along existing transport corridors, rather than new alignments opening up areas for development. Urban efficiency requires megablocks to be broken up, but PSP makes this less likely. The BOT approach is sometimes market-led, focused on the capital and roads radiating from it. Most such projects still require substantial government investment. The result may be to starve high priority/lower-cost projects, and disadvantaged regions of public investment. This is in prospect in the Philippines.
7. Social/Environmental issues Concessions may affect the application of social and environmental policy	There is little evidence that projects are designed to secure social equity or environmental objectives. There is however no evidence that PSP circumvents government requirements regarding land acquisition, relocation and compensation. In Bangkok revaluing land at market prices increased the cost of all BOT projects markedly. Neither is there compelling evidence that direct impact of BOT projects (visual, severance etc) are worse or better than other projects.
8. Development of road transport companies	Companies have developed in the UK and elsewhere. But in Asia, concession companies are usually strongly construction-led. In Hong Kong, China the later winning concessionaires (Western Harbour Tunnel and Route 3) have not included any contractor equity — a preferred arrangement.
9. Procurement	BOT processes vary hugely. Hong Kong, China is without doubt the benchmark in Asia. Many countries secure little or no competition or risk transfer, with obvious results. The absence of transparent procurement processes can readily result in substantial corruption, which frustrates the core PSP objectives.
10. Implementation	Traffic congestion during construction is a concern, but is surprisingly well managed, and not a serious problem. Failed implementation is rare. When it occurs it is problematic. This faces the Thai authorities re Hopewell.
11. Political	There is sometimes a fear of 're-colonization' by foreigners. This exists in Eastern Europe, but not in Asia. There is sometimes concern to protect government jobs. This stopped the Hungary M3, and has been a problem in Poland too.
12. Role of international financial institutions	IFI's play almost no direct role in project financing. This is for a variety of reasons: the size and economic viability of the projects, concerns about their preparation, concerns about competitive procurement etc. In Asia the sole expressway involvement has been Bangkok Second Stage Expressway (ADB).

We started this report by noting that there were two generic arguments for PSP - a need for private funding so that political aspirations could be implemented, and a belief in PSP as the better way to improve sector efficiency. It is notable that those countries that support the second argument: for example, UK; Hong Kong, China; and Australasia — have not developed huge expressway BOT networks, but rather targeted individual BOT investments, and developed alternative PSP modalities, widely.

2. Conclusions

The overwhelming conclusion is that in Asia it is early days for PSP:

- Despite the rhetoric, there are not many projects: just 20 operational to date (with many more in PRC).
- Only a handful of projects are profitable - they are the exception. Clearly, the widespread belief that 'BOT expressways make money' is, outside PRC, incorrect. This conclusion is reinforced by all the evidence in Asia, Latin America, Western Europe, and in Eastern Europe.
- It is difficult to make unprofitable projects profitable without radical changes in government policy towards the road sector. Linking property development to expressways is rarely an answer (the revenues are uncertain, and few banks will lend on the basis of them). Providing substantial assets certainly helps — for example, an existing un-tolled expressway or tunnel, when tolled and extended may indeed be profitable as a private concession.
- There is a very mixed performance against the stated PSP objectives - some good but much that is not good:
 - Implementation, yes - some projects, but not always in the public interest.
 - Better implementation: faster usually, lower-cost only sometimes (depending on the extent of competition).
 - Substantial private funds mobilized, but often underwritten by government - and more limited amounts of risk capital.
 - Better travel for inter-urban road users, but in cities expressways certainly (alone) do not solve traffic congestion.
 - Certainly advances in understanding risks - a major advance; but often risks subsumed by government, explicitly or implicitly.
 - Innovation - yes, many good examples but usually isolated (see below).
- There are varying impacts on the key issues identified:
 - Little evidence that the private sector can alone make projects happen.
 - Almost always problems introducing tolls, with the location of tollgates sensitive. Pervasive interference in allowing contracted toll increases to occur.

- Evidence that implementing too much too quickly is risky, resulting in a substantial misallocation of resources (with no chance to learn from experience) and may also have adverse macroeconomic effects.
- A public policy question concerning the development of an integrated expressway network from individual (competing) concessionaires: how is this to be done? No one yet has the answer.
- Concern that the policy is distorting public investment priorities substantially by default, because of the wide ption that projects are profitable, and the contingent liabilities many governments take on, and are then called.
- Concern that corruption is undermining the core PSP objectives.
- Concern too that the policy is not encouraging urban efficiency, rather reinforcing existing transport taxes, and failing to bring inaccessible land into development.
- Little evidence that social equity objectives are incorporated in projects, when they could be.
- Reassurance that the policy is not subverting governments' environmental and social policies.
- Reassurance that traffic disruption during implementation is by-and-large well-managed.
- Many aspects of PSP are relatively primitive:
 - In Asia, PSP is often assumed to mean BOT projects, which is surprising - BOT projects are the exception, and will only rarely be widely implemented. There is, by contrast, no use of lower-cost PSP options, which have the potential to be applied widely.
 - Emphasis is almost exclusively on implementing a construction project, rather than on improving the level of service in the transport corridor - which requires other issues to be addressed such as: integration with the existing roads, conserving the capacity of existing roads, reducing accidents, minimizing disruption from incidents, maintenance, etc.
 - BOT projects comprise huge pieces of infrastructure, whose construction it would seem natural to stage. Yet Hungary M5 and some of the expressways in Buenos Aires are the only examples we are aware of.
 - Tolls only rarely derive from public policy objectives, rather they are the results of the bidding process. Yet it is clear they are important in determining the impact of expressways and therefore their rationale. If tolls for trucks are high (the normal case), few trucks use the expressway. If tolls for buses are low (as in one case -Malaysia), then the benefits for low-income travelers are huge.

- Tariffs are often optimized for revenue-maximization on opening, then allowed to become hugely sub-optimal. And they are often determined by the precedent of the first project (as in Malaysia), unrelated to the specifics of each particular project (which a user charge should do).
- There are many examples of innovation. Some hold great promise. Yet they are almost always isolated, confined to one project or one country.
- Governments are only now coming to terms with the scale of government commitment resulting from BOT projects - in kind, as investment, or through guarantees (contingent liabilities) being called.
- The absence of value-for-money analyses or before-and-after studies is striking.

a. Impact of the Economic Crisis

While evidence is patchy, there is reason to believe that PSP processes are improving, often with the assistance of the major multilateral development banks. In the Philippines, ADB has assisted government carry out a Transport Strategy Study, focused upon action to improve PSP sector-wide; and it is currently preparing a loan, providing capacity-building support to government, improving PSP processes and identifying possible hybrid projects for implementation.

In Indonesia, the Government recognizes that in spite of many successes, past practices had their shortcomings, and it is now actively reforming the legislative and regulatory frameworks, and improving the process of project identification and procurement. Presidential decree No. 7 approved in January 1998 requires open competitive bidding for all infrastructure projects, that such projects should have been identified as priorities by Government, and that unsolicited bids would also be subject to competitive bidding. ADB is providing loan assistance for a Transport Strategy Study to build upon these initiatives.

In Malaysia, the Government is revisiting its PSP processes, in particular its automatic underwriting of bank loans, and is considering how to deal with the many project developers who have applied for government financial assistance.

These are all promising signs that the window of opportunity which the economic crisis has opened is indeed being grasped. PSP processes are likely to be better suited to the future when economic growth reasserts itself.

b. Overall Conclusion

The overall conclusion based upon all the case studies and other available evidence is that:

- Much needs to change, before the required benefits of PSP in this sector are realized.
- Implementing a successful BOT policy is very demanding — only Hong Kong, China in Asia achieves this, and nowhere else is yet close.

- There is much to learn from the case studies, and these offer great potential to improve the BOT process.
- Other PSP modalities hold considerable promise, are less demanding to implement and may have more to offer than the BOT process, given the economic needs of most Asian countries, including the rehabilitation or improved maintenance of the existing road network.
- Events since the economic crisis offer hope that change is taking place.

III. KEY ISSUES

This section of the report identifies the key issues established from the review of current practice, and the implications for best practices.

A. Expressways are Different

PSP in infrastructure was applied first in the power sector in most Asian countries. Usually this was for power generation plants which could be sited remotely, and where the deal involved modification to an existing concession contract. This model of privatization is still perceived to be successful by many — albeit that it has now been widely superseded, for two reasons:

- First, because the contracts have not stood up to the recent economic crisis — they were formulated without anticipating the large currency devaluations and the reduced demand for power which has resulted.
- Second, because the privatization of the power sector is now recognized as being far more complex, first requiring consideration of the whole structure of the industry, and then the development of a strategy for implementation of the inter-related elements.

Nevertheless, the expectations of many of the key players for BOT expressways are usually benchmarked against this perception of success. Even in these terms however, the expectations of success are misplaced — because expressways are seen to be very different from power stations (Table 14).

Table 14: Characteristics of Power and Expressway Projects

CHARACTERISTIC	POWER STATION	EXPRESSWAY
Project Identification	Straightforward	Demanding (not all expressways are 'good', problems with competing projects)
Cost	High - but costs spread over life (operating costs are high)	High - but all costs up-front (operating costs are low)
Location	Remote	In the middle of big cities, or major developed corridors
Land requirements	Small: a single site for the power station	Large: Often in central locations, often a continuous strip (difficult acquisition)
Environmental impact	Small (remote location)	Large for elevated structure, medium for others. Involves extensive land acquisition/relocation
Integration requirements	Considerable	Extensive — traffic depends upon effective integration with the transport system
Tariff problems	Same (at least people already pay for electricity)	Huge: roads are 'free' to use There is almost always a 'free alternative' A separate negotiation for each project
Demand/Revenues		
• Size	High - fixed from day 1	Low in early years
• Uncertainty	Certain (defined in the concession agreement)	Uncertain in the future (depends on external factors)
Financial Viability as a stand-alone project.	Viable	Not viable (only a few projects are viable)
Complexity	Power station output often large relative to demand	Expressway small relative to the network. Each project is different (different tariffs etc.)
Number of Buyers	One - purchaser of the take-off agreement	Every vehicle
The Result		
Political	Maybe	Yes - very - resistance to construction, introduction of tariffs, increases in tariffs
Need for government support:		
• Implementation	Maybe	Yes: permissions, acquisition, relocation, integration
• Operations	No	Yes - integration, tariff increases
• Investment	No	Yes - Often substantial
Risky	Low: Implementation not a problem. Costs known and predictable No revenue risk	High: Extensive implementation and cost problems Very substantial traffic and revenue risk

B. Attracting Traffic, Securing Revenues

1. Why Prepare Forecasts?

Most forecasts are prepared either for project sponsors or bankers, before the implementation of an expressway. Sponsors are concerned primarily that the project is financially viable and proceeds (allowing them to secure short-term construction profits). Bankers are concerned to ensure their loans are repaid. In some instances, repayment is guaranteed by government within concession agreements, but usually the banks are at some risk, and then they are concerned with downside risk - specifically: what is the probability of the revenue stream being so low that repayment is threatened?

Neither of these parties typically has an understanding of traffic and revenue forecasts.

2. Expectations and Reality

Project sponsors, and many bankers too, believe that it is not difficult to forecast traffic. This report dispels that view, which is a principal cause for the problems in this sector.

Although toll roads represent significant investments by developers (and often governments), there seems little understanding of why some traffic uses a toll road whilst other traffic does not, or of the resistance to tolls by companies/drivers of all vehicle categories, or of the likely growth in either traffic or revenues. Rather, there is a widespread belief that expressways should make money; and sometimes the forecasts are required to justify this.²⁸

Revenue projections are too often based on forecasting studies which are severely limited by time and budget constraints. This reveals ignorance of the complexities of traffic forecasting. Thus, it is usual for sponsors to invest a substantial amount in technical studies, cost estimation, and in financial and legal advisers; but only a small amount to determine the revenue stream — on which expectations of profits and debt repayment principally depend. This failure to invest adequately in traffic studies leads to the lack of essential information about existing traffic characteristics in the proposed toll road corridor, and a simplified forecasting model using limited and sometimes poor inputs. The result is often very unrealistic outputs, which are misleadingly used to demonstrate the project's apparent financial viability.

Traffic and revenue projections are typically developed as follows:

- Traffic surveys are carried out in the corridor of the proposed toll road, usually comprising some (but rarely all) of: traffic counts classified by vehicle type, origin-destination surveys, stated or revealed preference surveys²⁹ to establish users' willingness-to-pay tolls, and journey time surveys.
- Other data are collated on land uses (current and projected), historic traffic, and economic growth.

²⁸ We hasten to add that this is the last thing a professional consultant should accept, but it is nevertheless far too common an occurrence.

²⁹ Revealed preference surveys are based upon observations of how drivers behave when faced with an expressway (unfortunately there is relatively little such evidence). Stated preference surveys estimate response based upon surveys with potential users, who are presented with a series of trade-off questions. Both approaches are required, additionally drawing upon international comparisons.

- A traffic-forecasting model is developed, validated to base year conditions, which produces traffic and revenue forecasts for a few specific future years, for a range of scenarios.
- A revenue stream for the project concession period is developed by interpolation and extrapolation of the model revenue forecasts.

The forecasts require assumptions about generated traffic - new traffic not previously made in the corridor, and resulting from the expressway - this may result in a significant addition (e.g., 10 percent - 20 percent) to traffic determined by the model. Simple forecasts are prepared for economic growth and the growth in vehicle ownership, while government or other external forecasts are typically used for population/land use (which may or may not have been well developed). Whilst forecasts are usually prepared for a limited number of separate vehicle classes (e.g., cars and goods vehicles) the number of vehicle classes is often less than the number of tolled categories which will be enforced when the toll road opens. Forecasts may be prepared for different time periods during the day (especially in urban areas) but rarely cover weekends or holidays (instead traffic in these periods is incorporated in the annualization of daily revenues to annual totals).

Table 15 summarizes the forecasts for selected tolled expressways:

Table 15: Expressways - Comparison of Forecasts and Outturn Performance

Project	Car Toll US cents	Traffic '000 vehicles/day	Traffic growth	Outturn compared to Forecast?
Malaysia - Singapore Second Crossing	181 ³⁰	10,000 (incl. motorcycles)	n/a (just opened)	traffic half forecast; revenues one third forecast
Lahore – Islamabad Motorway, Pakistan	1.35/km	4,000	n/a	Traffic half forecast; revenues less than one third forecast
North-South Expressway, Malaysia	2.9/km	up to 100,000	10% pa	Correctly forecast

This sample of expressways is, in our experience, typical both of Asia and of other developing countries. It demonstrates a most important fact: that forecasts are usually high and optimistic.

a. The Impact of an Expressway

When a toll road opens, the following chain of events typically occur:

- The toll road will parallel one or more existing roads, which appear to be congested. In fact, vehicle flows may be relatively low as much of the congestion may be caused by low technology/low speed vehicles consuming much of the available capacity. Typically, existing inter-urban roads may be carrying between 10,000—20,000 vehicles per day (vpd), with generally higher flows in urban areas. Of course, much of this traffic would not use a toll road, e.g., low technology vehicles as above, motorcycles, local buses, many goods vehicles.

³⁰ Toll levied in each direction, by the Malaysian and Singaporean authorities.

- When the toll road opens - except in urban areas or short sections of new road - traffic takes time to find the new facility; this is referred to as the 'ramp-up' time, which may extend for up to several years.
- Tolls on opening will usually have been determined by the developer and agreed with government; depending on the process involved and the quality of the traffic forecasting studies, these may or may not be the intended optimum (in the sense of either maximizing revenues or achieving social goals). However, the scope for subsequently adjusting tolls is usually limited: examples where unrealistically high tolls were set include both the Malaysia - Singapore Second Crossing and Lahore -Islamabad Motorway.
- Cars and buses are the most willing to pay tolls for time savings, goods vehicles and some taxis are the most resistant. The typical composition of toll road traffic is overwhelmingly cars (80 percent of traffic on Malaysia's North South Expressway, 65 percent on the North Luzon Expressway in the Philippines, the JAGORAWI toll road in Indonesia, and the Lahore-Islamabad Motorway in Pakistan). As noted elsewhere, the PRC is different with private car traffic the exception.
- Initially, traffic is low relative to the road capacity — typically, it may be around 10,000 vpd relative to a capacity of 60,000 vpd for a dual-2 lane road - i.e., about 15 percent of capacity; and less for a dual-3 lane road.
- The diversion of traffic onto the toll road may come from other corridors, and in extreme cases may be derived from other countries (for example, the M5 motorway in Hungary).
- The diversion which occurs depends in part on the impact on capacity of the existing roads. A poorly designed elevated expressway, for example, can reduce capacity of the existing road (e.g., losing one lane in each direction to allow space for pier supports).
- Traffic growth is often rapid for two reasons: firstly, traffic starts from a low base (during the ramp-up period); secondly, there is a generation effect in the sense of new trips being made which were not made before the toll road opened. In practice, it is difficult to quantify either effect precisely, but together they can lead to significant growth — observed traffic increases following opening on some well used roads are as follows:
 - JAGORAWI (Indonesia) -140 percent in four years.
 - Guangzhou - Foshan (PRC) - 180 percent in three years.
 - Malaysia North South Expressway (sections open in 1989) - up to 65 percent in two years.
- Other effects can then act to sustain the high traffic growth rates. These include:
 - (i) longer-term generation effects as new developments move into the corridor as a result of the improved accessibility provided by the toll road, (ii) network effects as other sections of the same route or of feeder routes open, and (iii) increasing congestion on unrelieved sections of the non-tolled alternative routes.
- However, traffic growth is constrained by toll rate increases. These are often subject to political interference which tends to favor the deferral of increases. Therefore,

when increases are allowed, they are then larger than originally planned. For example, tolls on Malaysia's North South Expressway are supposed to have increased at six percent per annum since 1988; in practice, tolls on cars have been increased by 50 percent in 1993, 20 percent in 1996, 17 percent in 1997, and the six percent increase for 1998 is currently deferred; while tolls on inter-urban roads in Indonesia have not been increased between 1992 and 1997).

- Five years after opening, toll road traffic has typically increased to two to three times the traffic level on opening (i.e., typically 30,000 vpd on important inter-urban roads). Traffic on the existing road can be back to or even higher than the pre-toll traffic level (reflecting the generally increased activity in the corridor as a whole resulting from the improved accessibility). Thus, the total corridor traffic may have increased by a factor of around three.

b. Tariffs

There is considerable variation in tariffs. This variation is primarily between urban and inter-urban roads (with bridges/crossings as a separate highly tolled category), rather than between countries.

The mark-up for heavy goods vehicles is around twice the car rate on well-used roads; higher mark ups exist but only on roads where traffic levels are low. For buses (and taxis), Malaysia has adopted a social policy which keeps tolls low - below that of cars - in order to help the mobility of the poorer sections of society.

Current tariffs or proposed tariffs on a selection of toll roads are summarized in Table 16.

Table 16: Tariffs on Toll Roads (US cents per vehicle)

Expressway	Car	Small goods	Large goods	Buses
Malaysia: North South Expressway	2.9	4.2	5.7	1.7
Malaysia: North South Central Link	2.9	4.2	5.7	2.2
Malaysia-Singapore: Second Crossing	181 ³¹	411	821	219
Pakistan: Lahore – Islamabad	1.4	2.0	3.6 - 4.5	2.9
Indonesia: JAGORAWI	2.2 (1997) 1.1 (1998)	2.2 (1997)	2.7 -3.8 (1997)	2.7-3.8 (1997)
Indonesia: Jakarta – Tangerang	2.6 (1997) 1.3 (1998)	2.6 (1997)	4.1 (1997)	4.1 (1997)
Indonesia: Jakarta – Cikampek	2.4 (1997) 1.2 (1998)	2.4 (1997)	4.1 - 4.9 (1997)	4.1 -4.9(1997)
Indonesia: Jakarta Inner Ring Road (Urban)	5.5 - 8.2			
Philippines: South Luzon Expressway Extension (Batangas)	Proposed 2.0			
Philippines Skyway (Urban)	14.5			
PRC: - typical rates	3.0 - 7.0			

³¹ Toll levied in each direction, by the Malaysian and Singaporean authorities.

c. Forecasting Errors

Many traffic and revenue forecasts ignore some of the realities described above or are based on key input assumptions which do not in fact occur. Typical errors include:

- **Data.** The database is often constrained by budgets and time-scales so that it does not include good origin-destination data or accurate traffic composition data (which can be crucial to the revenue forecasts given the different toll rates by vehicle category).
- **Model specification.** Models can be poorly specified, especially those which estimate the willingness of drivers to pay tolls, leading to over-optimistic assumptions about diversion rates to the toll road. There are technical issues concerning:
 - The best methods to establish values of time. Stated intention surveys are often used rather than stated or revealed preference; this can lead to serious misjudgment.³²
 - How these values of time are applied in the traffic model.
 - How growth in values of time should be estimated.
- **Model inputs.** Simple assumptions are generally made for future traffic and economic growth (these generally ignore short-term effects), interactions between traffic on different roads, and macro developments elsewhere. The derivation of forecasts between model forecast years - often separated by 10 years or more - can ignore key events such as other projects opening, which affect traffic disproportionately during this period. Often, no allowance is made for traffic ramp-up (i.e., the time it takes traffic to discover the new route).
- **Tariff assumptions.** Forecasts generally assume that tariff increases (and even the initial tariffs) will occur as planned. In practice, these are often subject to considerable political interference. Sensitivity tests rarely consider this issue, but instead tend to concentrate on variations in economic and traffic growth, and diversion rates from existing roads.
- **Network assumptions.** Governments may have a strategic plan for their highway network, but this may not be used to determine what is implemented. Some BOT projects suffer from competition from other projects which are subsequently opened in the same corridor. The possibility and impact of competing infrastructure is often overlooked.

³² A survey of goods vehicle drivers outside the JAGORAWI corridor (south of Jakarta) identified 80 percent of drivers who claimed to have used the toll road; subsequent surveys within the corridor revealed that only around 40 percent actually used the toll road. The impact on the project finances was far greater than this, because goods vehicles were assumed to pay far higher tolls than cars.

3. Key Issues

Forecasting requires understanding and segmenting the travel market into homogeneous sub-markets with individual behavioral characteristics. In particular, it requires an understanding of how traffic responds when faced with tolls.

a. Tariffs

Once a toll road has opened, we are not aware of any studies to establish whether the appropriate (i.e., revenue or social objective maximizing) tariff levels have or have not been set. There is often little provision or opportunity to change toll levels post opening, even when an expressway is clearly performing badly. This may reflect some inflexibility in the concession agreement or by the regulatory authority, but is mainly the result of the financial imperatives that must be met by the developer/operator (who is usually unprepared to reduce tolls in case even the small revenues that are being collected should be lost; or the potential for future increase is lost). So, to the question: 'Could revenues be increased by setting tolls better?' there is no clear answer available.

b. Willingness-to-Pay Tolls

The drivers of cars and motorcycles decide whether or not the toll is worth paying. For buses the decision is made by the company - and because the benefits are usually high (in terms of improved utilization of the bus, and the increased tariff which may be chargeable) and the costs low (the toll is divided between all passengers) most inter-city buses use toll roads.

However, for goods vehicles it is a more complex issue, and the use of the toll road depends upon:

- The structure of the industry. The more it comprises small owner-operated or leased vehicles, the less likely is the toll road to be used - because such vehicles rarely have back-loads, and in practice may expect to spend several days before returning to base. Not surprisingly, their value of time is very low. This is common in developing countries.
- The form of payment. Some operators market tokens to large companies, which ensures that drivers actually use the toll road (as opposed to pocketing the payment and avoiding it).

The choice in each case is between the perceived cost of the expressway and the existing road. This cost may include illicit payments to police, provincial taxes, bridge or other tolls, as well as long journey times. Some of these 'unexpected' costs may be faced on expressways too, negating part of their advantage.

Where the marginal costs of tolls is relatively unimportant (and especially if the expressway forms only a small part of the route but offers large time savings), operators have an opportunity to set high tolls. However, this needs to be a decision based on an informed understanding of the market traveling in their corridor.

c. Integration with the Highway Network

There is a tendency for the expressway to be seen as an end in itself, yet the traffic it carries is affected very substantially by the success, or otherwise, with which it is integrated into the existing road network.

Factors that are important are:

- Junction locations and design - unless traffic can access the expressway readily, it may be deterred from using it.
- Road improvements in and near the expressway corridor. These may be outside the influence of the concessionaire, yet they can impact substantially on its traffic. This was a major problem on the Don Muang Tollway in Bangkok (in which the Government has now had to invest).
- Integration faced with other competing expressways. This concerns physical integration, and tariff integration, and is considered below.

A BOT road stands a better chance of success if it is part of a wider strategic network into which it is well integrated. The North South Expressway in Malaysia is a good example of a strategic route of national importance; even rural sections, which are directly tied into the rest of the route, carried significant traffic volumes on opening (typically at least 20,000 vpd).

d. Marketing

Little marketing seems to be carried out at present, and there are few toll roads where rates are varied by time of day, or offer concessions for regular use, or operate widespread prepayment deals. There are significant opportunities for action in these areas, even where an expressway is reliant on manual toll collection methods.

e. Uncertainty and the Treatment of Risk

Implementation and operation of an expressway in a developing country environment faces many risks. There are, however, two issues which should be highlighted here:

- It is clearly the case, that uncertainty in the revenue stream is much larger than in the costs, yet it is the latter that receives the main attention.
- There is surprisingly little attention given to comprehensive risk assessment.

Government should be very concerned, but largely ignores risk (save to ensure that excess profits are not made). Developers are usually contractors, concerned primarily with construction risks rather than other downstream uncertainties (which they do not expect to face, having exited the project after opening). While lenders are usually³³ concerned with the downside risks, but they often examine these issues late in the planning process, by which time developers and governments have become committed to the scheme and the project has developed an unstoppable momentum of its own. Lenders (and their advisers) are usually under considerable pressure not to halt progress or kill the project at the eleventh hour.

In summary, it is the case that only rarely are project risks addressed comprehensively and early enough to influence the project specification, staging, etc.

³³ Except where they are underwritten by government, as in Malaysia, where they have - until the current crisis - been little interested in risk.

4. Toll Revenues

a. Objectives

Typically 95 percent of the revenues from a toll road result from tolls; with the remaining five percent from advertising and small concessions; so securing the revenue from traffic using a toll road is of critical importance. It is interesting that it is the banks who often seem more interested in this than the concessionaires.

The purpose of tolling is to maximize net revenues (revenues less the costs of tolling). The factors involved are:

- Maximizing the quality of service offered to customers (avoiding frequent stops for payment at one extreme, and any stops at the other, while simultaneously making payment easy. This maximizes traffic and the willingness-to-pay of users.
- For companies owning trucks/vans, their objective is to ensure that the payments they make, result in their vehicles actually using the toll road (i.e., that the driver does not pocket the toll). Some tolling systems can guarantee this — which is strongly to the advantage of the concessionaire too.
- The need for land-take (for tollbooths) and the capital and operating costs of tolling systems need careful assessment.

b. Tolling Systems

These are categorized as:

- Open, closed or hybrid (the latter being part open, part closed). Generally, open toll systems are used in urban or semi-urban areas where traffic flows are high and there are numerous entry/exit points along the toll road which it is difficult/costly to control; while closed systems tend to be used on inter-urban roads with limited access. But these are not hard and fast rules.
- Closed systems ensure that all toll road users are charged a toll directly related to their usage of the toll road. Open systems do not charge all users (only those passing through the tollgates) and the charge is the same irrespective of journey length; as such they do not collect all the potential revenues. However, their operating costs are lower and there are fewer delays to traffic.
- A well-designed open system can achieve most of the revenues of a closed system, but there will inevitably be some leakage. This needs to be minimized by careful design and analysis of trip patterns and route choices.
- Single lane/manual collection, or electronic or mixed - where regular users have tags and are required to slow down only at the toll gates (to 10kph-15kph). There are more than one hundred such systems worldwide.
- Free flow multi-lane all electronic.

Today in Asia, all systems are relatively simple, usually requiring drivers to stop for payment at toll-gates, but with several examples of exclusive lanes for regular users with tags, for example, in Hong Kong, China; Malaysia; and Bangkok.

c. Electronic Systems

The key aspects of these advanced systems are as follows:

- The technology: this is now proven, but not perfect, even for complex multi-lane solutions.
- A EU/international (CEN/ISO) standard exists for the vehicle to roadside communications, supported by competing manufacturers (in use in Austria, Australia, etc., but not yet implemented in the US).
- Devising strategies which both provide support for irregular users, and enforce penalties against people who do not intend to pay.

The technology typically comprises:

- A tag in the center of the vehicle windscreen, conforming to the EU standard, is the simplest method, and is no more than an identification card. An in-vehicle smart card system complicates the design (due to more sophisticated strategies which are required to reliably enforce payment violations).
- Tag-to-overhead beacon communications, now reliable (provided the tags are working and fitted properly — making fitting every vehicle highly desirable).
- Overhead equipment which detects a vehicle, captures the registration number (by taking an electronic image of the number plate), and classifies the vehicle by length/height/width.
- Roadside computers linked to a central computer/database which results in any of the following courses of action:
 - Notifies the central computer of a 'successful' payment using the tag.
 - Notifies the central computer of a 'successful' payment from an irregular user (no tag).
 - Identifies no pay where the tag is not functioning (for follow up).
 - Identifies no pay where there is a willingness to evade.
 - Organizes billing.

The key to the enforcement of non-payers is an understanding of the customer-base - hence an ability to separate deliberate avoiders (multiple offenders) from good customers with occasional problems (maybe due to tag failure). The technology allows reliable classification into three categories:

- Those who pay - success.
- Those who do not - probably because the tag is badly installed (occasional defaulter).
- Those who choose not to pay (repeated defaulters).

A large penalty is required for offenders.

Enforcement depends upon having accurate records of car owners' addresses. If these don't exist, then electronic systems (such as speed/red light camera enforcement) will not work.

d. Regulatory/Legal Requirements

The key bodies involved are the concessionaire, the state legal authorities (police, courts), and the road authority.

If a law is passed (as in Singapore) requiring a car to have a tag, then enforcement is relatively straightforward (it is an offense not to have a tag, and as such the technical problems of dealing with valid unequipped users is avoided). Moreover, the tag can incorporate the vehicle tax, allowing tax evaders to be simply traced. But this is the exception at present.

Any toll road needs regulations to exist. Legislation is required to cover the following issues:

- Collect tolls.
- Sign the toll road, from the existing roads.
- Control advertising along the toll road.
- Define operational procedures - access for emergency vehicles (who is responsible for what?).
- Issues of privacy: whether an electronic photograph of a number-plate will be accepted by courts; defining the approval process for such equipment, or defining what information can be disclosed to whom under what circumstances.
- Defining the right to enforce for non-payment, with penalties that make violation unattractive (who is the enforcing agency, is it a civil or criminal offense). Non-renewal of annual vehicle licenses for outstanding penalties is one option.

e. Inter-operability

How can systems work in a network which comprises different concessionaires? The answer is likely to be that:

- All systems should use the same EU standard tag. This can be used to bill different concessionaires, with different accounts. This is the most likely scenario (usually, as in France and Germany, there is a single dominant operator).
- Alternatively and additionally, adopt single billing for the convenience of customers. This requires a clearing house with revenues allocated on the basis of clear guidelines. No such system is known to exist, although Malaysia/Klang Valley is looking at such a system.

f. Costs

An example: Melbourne CityLink - the costs for one project, which is pioneering the effective use of electronic technology are as follows:

- Construction cost for the expressway are US\$0.8 billion excluding financing, and US\$1.1 billion including financing.
- Contract for all electronic tolling equipment: US\$40 million. The technology therefore costs about five percent - six percent of the cost.
- Tags cost about US\$30 each. The concessionaire pays for them (600,000 in total³⁴) - they are given to customers when they open their account.

For a more typical project the electronic tolling system might cost say four percent of total cost (Melbourne has costly tunnels).

g. Applicability of Tolling Systems to Developing Country Environments

Experience may be simply summarized as follows:

- Existing practices are often primitive - there is little doubt that electronic techniques will increasingly be applied.
- Electronic systems have great potential to maximize revenues: by providing an attractive level of service on the expressway, and a convenient payment system by providing flexibility to change tariffs - by time of day (peaking) or over time; and by securing trucking revenues etc.
- The tolling strategy has to be carefully designed (there are many subtle pitfalls).
- Tolling always requires legislative/regulatory requirements which must be enacted in law.
- Electronic systems require information about vehicle owners' addresses, for enforcement. Where this is insufficient, or enforcement is likely to be poor, manual systems are still necessary.
- Inter-operability is relatively easy to provide with electronic systems - by requiring use of EU standard tags. For manual systems it is not - repeated stopping is probably necessary (unless a clearing house can be set up — which is unlikely in most commercial environments).

³⁴ 1 million customers, 700 thousand transactions per day.

5. Non-Toll Revenues

Many assume that there are other sources of funds that the private sector can capture, other than tolls from motorists, but this is only rarely so. Typically, five percent of gross revenues come from other sources - primarily advertising and concessions.

Property profits are usually held out as the great hope, on the grounds that the expressway itself increases land values near interchanges, and results in development gain. This is often so, but the problems in capturing it are substantial.

- The first problem is that the profits are unpredictable (all property markets typically exhibit boom-and-bust cycles). If property gain underpins the project finances, it follows that the timing of the project is determined by the property cycle - which does not fit with the requirements of government's procurement processes.
- Secondly, land deals are not always straightforward and it is sometimes difficult (e.g., in PRC) to know who owns the land and what is happening. This makes it risky to depend on such deals.
- For these reasons, banks are usually unwilling to accept such forecasts of property profits as a component of a funding package, instead they assume they are zero.

C. Sector Policies

1. Policy Overview

a. The Need for a Change in Direction

Transport infrastructure provides essential access to jobs, education and health facilities and is crucial to economic activity. It is necessary for development. Changing economic circumstances and social aspirations are changing the way we use transport infrastructure and how we need to plan its development. Sustainability in economic, financial, environmental and social terms is now high on the agenda, and these re-defined objectives underpin a new approach to the provision of transport infrastructure. The traditional approach of provision by the public sector is disappearing. It is being replaced by an increasing involvement of the private sector, to achieve a more responsive transport sector, which, crucially, has to be given the right signals to respond to.

There are compelling economic and financial³⁵ reasons to involve the private sector in the funding and operation of the roads sector.

The traditional approach to the provision of transport infrastructure and services has been based on detailed government intervention. Infrastructure has normally been provided directly by the state and the state has either directly provided transport services or heavily

³⁵ This section distinguishes between 'economic' and 'financial' impacts. The former includes all of the project impacts (both those which are costs and revenues, and all others); while financial impacts include only the costs and revenues.

regulated privately provided services, usually controlling entry to the market, product characteristics, price levels and maximum profit rates.

The critical weakness of this traditional approach is clearly shown in the World Bank publication *Sustainable Transport: Policies for Reform, 1996*. It is the absence of incentives to ensure that infrastructure and services provided are in tune with market requirements, the public interest. The absence of competition leads to excess, monopoly profits, inefficiency in provision, and failure to respond to the needs of the market. The report explicitly defines government's central role succinctly: 'The basis for increasing economic sustainability in transport is to create a competitive, market-based transport sector'.

For this objective to be fulfilled with regard to the roads sector, the private sector has to be involved in their provision within a regulatory framework that delivers the effects of competition. Ideally, prices would be set at levels which send effective signals to transport system users and those making investment decisions.

However, experience of PSP to date has raised many issues. ADB is particularly concerned that, in some instances, corruption has distorted the impacts of the policy, and that social and environmental consequences have not been addressed.

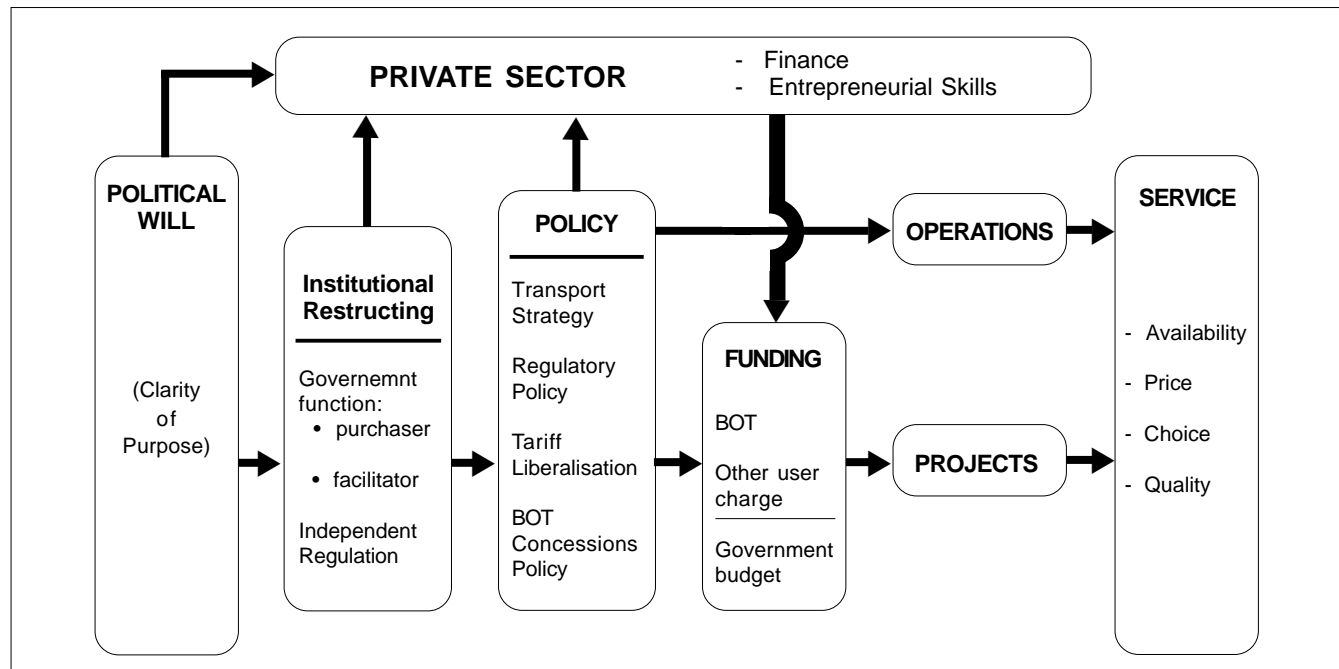
b. Strategy for Attracting PSP

Figure 1 summarizes the strategy that needs to be followed if PSP in funding transport infrastructure is to be effective. Its key features are:

- The objective (to the right of the figure) is to provide improved services to passengers and operators that are available and reliable, that offer choice and that are competitively priced.
- Political will is the essential starting point. Investors and lenders need to be sure that governments are committed to PSP, and to the private sector collecting tolls and repatriating debt service costs and returns on investment.
- An institutional framework which offers the private sector a level playing field is required. The public and private sector must operate on the same basis: an independent regulatory body and framework is now required (the same body cannot be both provider/operator and regulator).
- The right regulatory and pricing policies are needed, to create competitive markets. Market access must be guaranteed, monopoly practices controlled and safety standards enforced. Freedom in tariff setting is required to ensure that - as far as possible - users pay the full costs to society of their use of infrastructure and services. Where tariffs are kept low and are supported, the existence of the government support has to be identified and governments forced to decide whether the support should continue.

Such a framework will send the right signals to investors and lenders, encouraging their involvement in funding, building and operating transport projects. All of the components of the strategy need to be in place: the absence of any will discourage involvement, no matter how attractive the projects may be.

Figure 1: Philippines - Strategy for Attracting PSP



c. Preventing Corruption

There is understandable concern that in some cases, the private-sector approach has led to corruption and nepotism, which has seriously undermined the approach. This was based on the assumption by private groups that even in a chaotic environment, they could make money from such concessions.

However, the experience is that in practice very few have made money out of such projects, and there is a growing recognition that the current PSP process in most countries serves no-one's interests.

Moreover, the current economic crisis has reinforced government's commitment to make the procurement and regulatory processes more truly competitive and transparent. Change has been forced by the need to attract private finance, and the international competition for such finance.

The agenda for the future is to translate these objectives into effective action, in the knowledge that there is a growing constituency of support in both the public and private sectors for such changes.

d. Funding the Transport Sector

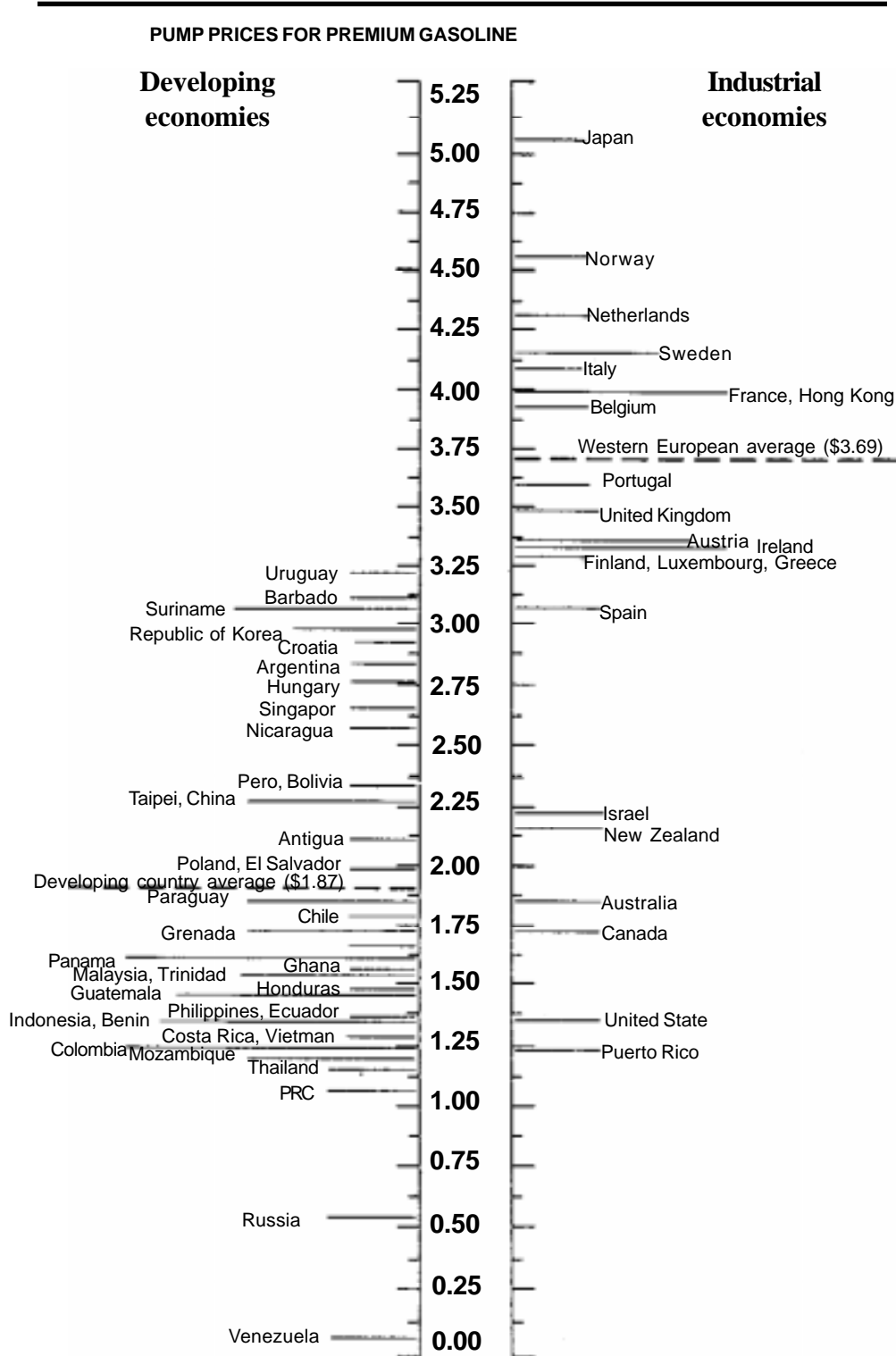
The principles of public sector pricing and taxation have been difficult to implement in the transport sector in most developing countries. In addition, it has been difficult to charge road users at the point-of-use for use of the road network. Because of this difficulty, the sector remains under-funded, having to rely on a share of general public funds rather than generating its own funds. Moreover, road funds are not secure; they are typically raided by governments with many demands and constrained resources. The result is no security in funding even for maintaining the basic road assets, and frequent disinvestment - where costs incurred to rehabilitate the road structure and pavement are many times those that good maintenance would have required.

Economic efficiency is served by setting prices equal to the full cost of an activity. In the case of the use of expressways, prices should cover:

- The road user's own costs of vehicle operation.
- The marginal costs imposed on the provider of the expressway, particularly damage to the carriageway.
- External costs, particularly in terms of congestion costs (delays and additional vehicle operating costs) and environmental costs.

In the absence of a mechanism for imposing direct charges for road use, the most appropriate way of approximating these costs is by incorporating them in fuel prices (see the aforementioned World Bank Publication entitled *Sustainable Transport*). Fuel prices should be set to cover:

- Its resource cost - normally the import (or export) price.
- Its environmental impact, mainly its impact upon air pollution (including global warming).
- The proxy road-user charge - which should reflect the cost of using the infrastructure.

Figure 2: Fuel Price in Different Countries (Premium Gasoline)

Source: Energy Detente (1994); World Bank.

Figure 2 demonstrates that fuel prices in most Asian countries are substantially below (only one third of) the average in industrial economies. The World Bank estimate that European prices are likely to be a more appropriate benchmark for developing Countries than the very low prices found in US — if this is the principal mechanism of recouping the costs imposed on society by road transport.

A critical first step is, therefore, to increase fuel prices so that they better represent the full costs of fuel use. At a stroke, this would provide a more efficient use of resources in the transport sector, and generate funds, the user-charge component of which should be dedicated to the roads sector. This is necessary, because there is no other available option, and without it the road sector in developing countries will remain seriously under-funded, and there will be no incentives to drivers in using their cars (the reason why congestion is widespread today).

A combination of fuel prices set in this way, and direct charges for the additional benefits offered by high-quality facilities such as many expressways, represents an appropriate development of transport sector pricing policies.

2. Appraisal of Expressways

a. Objectives

Table 11 summarized the objectives of expressways under four criteria: economic efficiency, development, social, and environment. The case studies demonstrated that while economic efficiency was always central to proposals, and development sometimes (in Malaysia and Hong Kong, China), social objectives were addressed only in Malaysia and environmental impacts were little mentioned.

Many arguments are put forward in support of expressways, they are usually considered to be the obvious response to serious traffic congestion. The fact of this problem is obvious, and the prospect of it becoming more serious is equally obvious. But the following questions are rarely asked, before drawing the conclusion that expressways are the right answer:

- Do expressways solve traffic congestion problems? It is often assumed that this is so, yet particularly in big cities - in Bangkok, Tokyo, or Seoul, all of which have large expressway networks, it is clear that (alone) they do not. The answer may be 'yes', particularly in inter-urban corridors, but it is not self-evidently so. Sometimes an expressway is clearly the wrong response.
- What other impacts do expressways have? Do they promote a sustainable form of development, are they environmentally sustainable? The answer depends upon circumstance, but some projects clearly distort strategy.
- Is an expressway affordable (if it is not, it cannot be implemented, however bad the problem). This question is rarely asked — instead, expressways are assumed to be profitable, and therefore free to the public sector. But unfortunately this is only rarely so.

It may be asked what is the alternative? The conclusion throughout the world is that the answer to the pervasive problems created by traffic congestion requires a combination of management policies for the existing network, improved public transport in urban areas, and

new road construction which targets identified problems and helps structure land development. In short, expressways have their place, but particularly in urban areas, this needs to be part of a balanced transport strategy.

It may also be asked what role exists for the private sector, if expressways are not appropriate. The answer is increasingly recognized to be very substantial. For example, it may well be that in the medium-term, the management of the whole main road system is concessioned out to private sector operating companies, creating a major new business opportunity for the private sector. The focus of such concessions will increasingly be on the management of existing assets, rather than creating new capacity.

b. The Nature of Expressways

This report defines *expressways* as controlled-access roads, from which a revenue stream may be secured, by tolling or through shadow-tolls. Expressways are what economists refer to as 'semi-private goods', and this has important implications.

Simply,³⁶ private goods can be produced by either the private or the public sector; and public goods can be produced by the public sector, or by the private sector in many cases.

A private good is one supplied in a form that involves:

- Excludability – supply is provided for particular customers (there are no free-riders).
- Subtractability – supply to one customer reduces supply to other customers.

Thus, power and water delivered to a house, office or factory is excludable and, at a given capacity, subtractable.

Roads are generally public goods, being both non-excludable and non-subtractable. But they can be converted into private goods through regulation and charging – as long as the costs of doing this (the transaction costs) are not too high. In practice, the costs of contracting, charging, and enforcement would be far too high for the road network as a whole, and many of the economic benefits would be lost.

But some roads can be made semi-private through controlling their access. Some of their potential customers (non-motorized etc.) are excluded, but they are not fully subtractable - their use by one authorized user does not prevent use by others. Access-controlled roads generally provide a high level of service, for which users are willing, and should, pay.

c. Financing Expressways

Controlled access roads provide a better service, and beneficiaries should pay. When the beneficiaries are also tolled, there is some loss of benefits. The contracting, tolling and enforcement costs of tolling should be reduced as far as possible to reduce this loss in benefits.

³⁶ We refer here to ADB's *Guidelines for the Economic Analysis of Projects*.

The semi-private characteristic of expressways provides one argument for some public funding. The other is that the roads generate benefits for people on the existing roads (who do not pay towards the cost of the expressway) through de-congestion, etc., and government should be prepared to pay to secure these benefits.³⁷

d. Profitability

An expressway is defined in this report as ‘profitable’ if the (almost entirely toll) revenues can finance the full cost of implementation (project development, land acquisition and construction), together with operating and asset replacement costs — and provide an acceptable return to shareholders.

At first glance, it would — contrary to the widely-held view — be surprising if expressways were profitable. Because expressways benefit two categories of people:

- Those who use them - and pay towards their cost.
- Those who do not use them, and instead travel along the de-congested parallel free road, and do not pay towards their cost.

The economic evaluation captures both these categories of benefit, but the financial evaluation only the former.

The evidence summarized in this report is compelling. Throughout the world, not only in developing countries, very few expressways are profitable given this definition. In the four case study countries, it is estimated that between three and five projects may be profitable (defined as above), out of a large number.

e. The PRC is Different

As described in Appendix 2, only the PRC is different, for understandable reasons. Here, costs are kept extremely low (the roads in question are inter-urban, and are constructed, operated and maintained using local inputs), the existing ¹ alternativ² routes are very poor and congested, traffic growth is rapid, and for many journeys the toll is only a small part of the total perceived cost of the journey.

The firm conclusion for everywhere other than the PRC is that expressways require government support/investment in order to create profitability for PSP. This may be in the form of an existing road asset, which is handed ‘free’ to the private concessionaire. Or it may be in the form of government guarantees, which — if they are called (because, for example, expected traffic has not materialized) then requires actual government investment.

³⁷ Arguably otherwise government would have to invest in alternative projects to secure the benefits.

f. The Impact of Country Income on Profitability

There is a *prima facie* reason to expect that profitability will increase with incomes. This is because while revenues should increase at least proportionately (as willingness-to-pay increases proportionately, as traffic growth increases at least proportionately, and as congestion on the free alternative route rapidly increases), costs should not increase. Their labor component cost will increase, but materials and energy costs are traded commodities, and should not. Typically, construction costs are estimated to rise at about one-third to one-half of the increase in income. The result is illustrated in Figure 3. There is one caveat - expressways in big cities can incur very high land costs - up to one-half of their cost when on a new alignment, but this is not the norm.

The implications are important:

- As incomes increase, expressways become more affordable to both their users and to government.
- Conversely, they are unlikely to be feasible where incomes are low.

g. The Implications of Non-Profitability

The implications should be obvious, but are not always appreciated. They are that:

- BOT expressways are costly - typical costs are in the range US\$0.25 billion-US\$1 .0 billion.
- They mobilize large private funds, but only at the cost of large public funds - a government investment requirement of US\$0.1 billion - 0.4 billion in just one project is not unusual.
- Public funds are scarce - the annual public sector budget for the whole transport sector (roads, ports, airports, and rail) in the whole of the Philippines is currently just US\$1 billion.

There is, therefore, a concern that BOT projects will inadvertently (because projects are widely thought to be profitable) pre-empt resources - maybe on a massive scale - which should instead be invested in:

- Other higher-priority investments in the same city or inter-urban corridor (traffic management, secondary roads, developmental roads, bus facilities etc.).
- Other disadvantaged areas. BOT projects are always concentrated where the traffic flows are high. This is usually in the capital city, or for the radial roads leading to it. Government usually has development objectives for other regions and provinces, for which it requires funds. If these are pre-empted by investment in so-called private roads elsewhere then plans can be undermined.

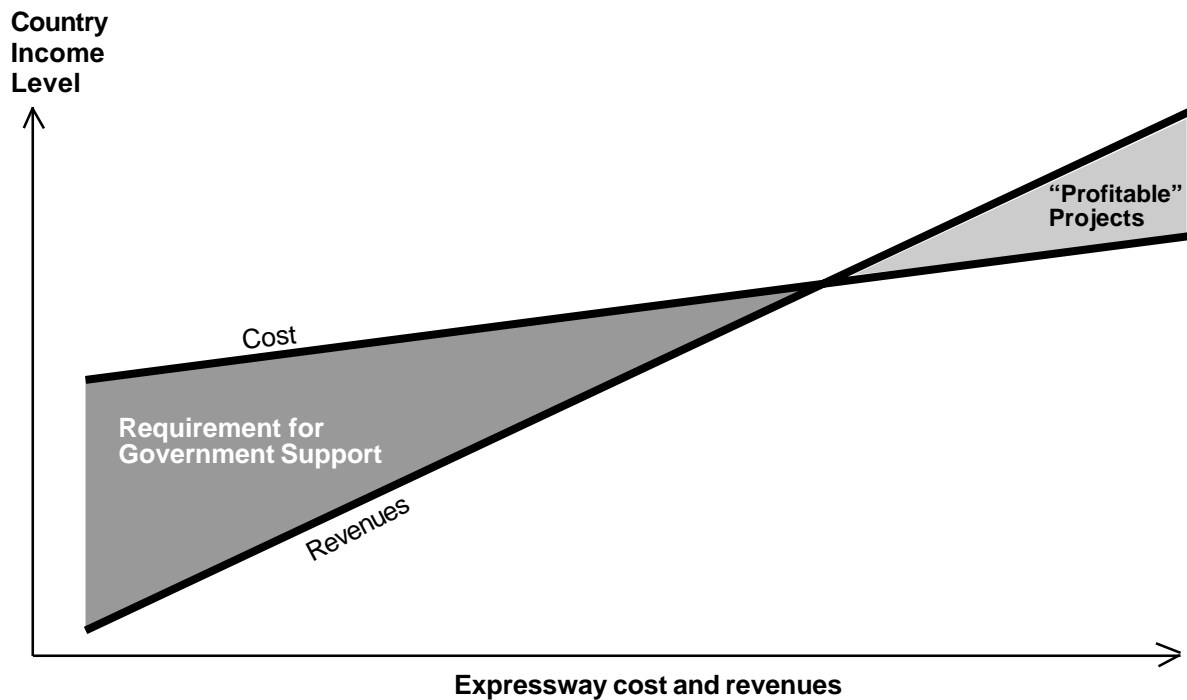
There is a further issue, which arises particularly in big cities - where many of Asia's BOT projects have been built. Land costs can become a very important component of expressway costs, which naturally leads to low-cost corridors being used. These are almost always existing major arteries, and the expressway reinforces the existing concentration along a few big

corridors. This would be fine if government was developing other arteries, necessary to open up land for efficient development. But this rarely happens, and one reason is that public funds are concentrated in supporting BOT projects.

Therefore, a central message for planners is that the public component of BOT projects needs to be evaluated against the other competing priorities before committing to such projects. BOT projects will not always be a rational use of government resources.

Therefore, private funding should be considered additional to public funding. But in practice it can only be so when economic analysis determines that the project has a high priority, and that the public investment required can be rationally justified against competing priorities.

Figure 3: Toll Road Finances and Income



h. Role and Scope of the Economic Evaluation

The public sector has an obligation to ensure that the development of the nation's infrastructure, including its road network, fulfills economic, financial, environmental, and social sustainability criteria. The economic appraisal of projects is a crucial public sector responsibility. Appropriate valuation of impacts should include social factors (e.g., the distributional impacts of a scheme) and some environmental impacts (others are incorporated outside it) - factors with which the private sector will have no concern.

The public sector should ensure that any proposed concession is an important and worthwhile use of funds. It should estimate EIRR and net present value (NPV) of the project not just to ensure that these are acceptable but also to ensure:

- That in a financially constrained environment, the project's NPV per unit of capital cost ranks it sufficiently highly to warrant the use of public funds.
- That the project as it will be implemented, with an appropriate toll structure, generates an appropriate EIRR or NPV.

It is not acceptable that the project solely exceeds government's test discount rate (typically 10–12 percent in developing countries) — because far more projects exceed this threshold than the public funds allow to be implemented (i.e., it is solely a threshold, which ensures that projects are not bad). Neither should the public sector accept projects that are financially viable; rather, it should satisfy itself that the project is a priority in its strategic plans, and does not have unforeseen consequences. Here the economic evaluation is essential.

It will be clear from the above that the economic and financial assessments will not give the same answers (in terms of their NPV or IRR) and are likely to be in conflict. The economic assessment has a wider focus and more detailed measurement than a financial assessment, which is narrow and crude by comparison. Figure 4 highlights the principal economic benefits which are excluded from, or will be under-represented in, a financial appraisal; and it shows that not all of the economic benefits are capable of being captured via tolls.

i. Implications of Government Investment

The semi-private characteristics of expressways and the existence of economic benefits that cannot be captured in toll revenues provides the rationale for public sector investment. It is, given the caveats above, right for government to want to invest in PSP expressways to secure the decongestion benefits for non-users of the expressway (and also other non-capturable benefits).

Many expressways should therefore be implemented under reverse-tender BOT contracts: e.g., the private sector bids at defined tolls to minimize the government investment. This is a most important conclusion, for it applies to most expressways (i.e., those that are not financially viable). Yet the case studies suggest that no government in Asia invites bids on this basis. Instead, bids are invited in the expectation that projects will be profitable, and when they are not, then either government support is committed (often in the form of contingent guarantees that do not become a liability for many years), or the project is delayed, or occasionally that it is abandoned.

Figure 4: Expressway Economic and Financial Characteristic

**Economic Evaluation
BENEFIT**

User Benefits

- Time savings to all road network users valued: both expressway users (who pay tolls) and users of the existing decongested roads (who do not)

- Individual estimate of time savings for each zone to zone movement
- Each fraction of a minute saved is valued

- Separate values of time savings by vehicle type and trip purpose

- Values of time assumed to grow through time in line with GDP/head as well as inflation

- Vehicle operating cost saving fully estimated and valued

External Benefits

- Environmental benefits
- Accidental benefits

**Financial Evaluation
REVENUES**

- Tolls recovered only from expressway users

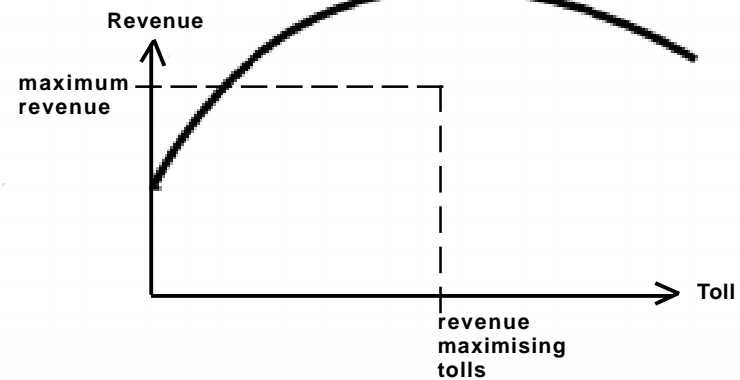
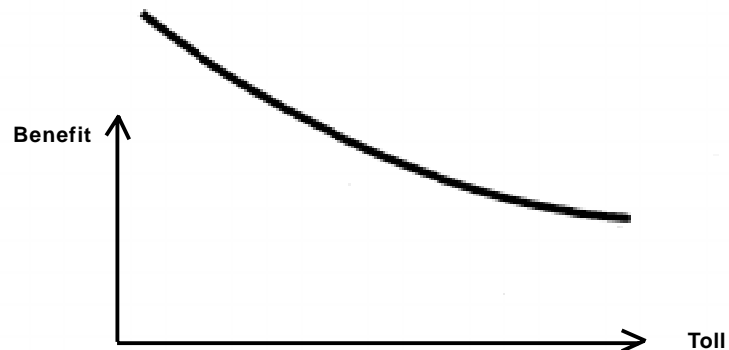
- Toll collection systems unable to differentiate different zone to zone movements, except coarsely, using distance as a proxy

- Toll collection systems unable to extract different tolls by purpose

- Tolls often allowed to grow only in line with inflation

- Can only be recovered coarsely through tolls

- No mechanism for their recovery



j. Impact of the PSP Environment

Traditionally, economic analysis was used to determine what should be implemented, and that was the end of economic analysis: implementation was assumed to be a neutral process. But the PSP environment has both highlighted that this is not the case, and focused attention on the huge importance of the implementation process in determining actual project impacts.

It is not unusual for projects to be approved on the basis of one set of assumptions, only to find that what happens is very different. In the case of PSP, this is critical. If the project tolls are very different from those assumed, if the roads accessing the expressway are not improved or if the construction cost and time are optimistic, then the decisions of both government and concessionaire will have been wrong, and conflict between the parties will be the result.

The decision-point for PSP projects needs to be made later, and on the basis of far more information than has traditionally been the case. Government should make its commitment on the basis of a business case, and central to this should be optimization of the project — confirming that it meets both economic and financial appraisal criteria.

These two appraisals should be seen as two-sides of the same coin. For example, government should be presented with choices such as the following, in order to decide the best trade-off between economic and financial performance:

Toll level	Economic IRR	Government Contribution US\$ million
1	20%	400
2	15%	300
3	10%	100

In this illustration, the medium toll level may be the most acceptable compromise - that is, government would wish to invest an extra US\$100 million, relative to the low-toll level, in order to secure a much improved economic performance.

3. Competition and Regulation

There is evidence that corruption and nepotism occur where this is absent, resulting in services which may not satisfy government objectives.

Toll roads are normally introduced into an existing free road network. Existing free roads will carry traffic to and from the toll road and may compete with it. In some countries it is a statutory requirement that there has to be a free road available as an alternative to a tolled road. There may be strong modal alternatives to tolled roads: rail for passenger or freight movements, air for passenger movements, and shipping for freight movements.

a. Ensuring a Competitive Market

A competitive environment is necessary to ensure that appropriate investment and pricing policies are followed and that services are provided efficiently and are responsive to market demand. Competition can be provided *for a* market, and *within* a market.

Competition *for* the market - retaining public regulation of the right to supply transport is desirable in circumstances when:

- Duplication of services is wasteful or impractical, indicating a natural monopoly.
- A lack of regulation leads to the duplication of schedules, potential excess capacity, pressure to engage in dangerous practices, or a loss in the stability or reliability of services.
- Social objectives require direct financing or support to be provided. Competitive bidding is then required to ensure that services are provided at the lowest support.

Competition for the market for transport infrastructure is primarily achieved through the competitive award of long-term concessions. This competitive process introduces market forces into the provision and management of infrastructure with the objective of stimulating efficiency by transferring risk to the private sector.

Competition *in* a market, free from barriers to entry, is appropriate when the market size is large relative to the efficient scale of operation of services within the market. A number of operators can then provide efficient services in competition with one another. Alternatively, if the efficient scale of operation is large relative to market size, competition in the market may still be achieved if there is strong competition between modes or, for international movements, if there is strong international competition.

The characteristics of expressways therefore require both competition *for*, and *in*, the market.

b. Requirements for Regulation in the Market

There is a need for the independent regulation of the activities of transport sector providers and operators, including the government, if PSP is to be encouraged. Regulation has to create a level playing field. The principal requirements for regulation in the context of expressways are:

- **The Provision of Alternative Routes.** For some transport services, a regulatory environment that permits the free entry of competing operators is required. For expressways, for which demand is normally unlikely to be sufficient to support competing routes, a regulatory framework which restricts the government provision of, or government support for alternative routes is likely to be required. Concessionaires and their lenders will want to be assured that government will not promote competing routes and that compensation will be payable in respect of government policies that discriminate against private concessions. Had this provision existed, the combined expressway/rail Hopewell project in Thailand may not have failed.
- **Tariffs.** Allowing a monopoly expressway operator to specify tolls will result in a monopoly profit that maximizes the price charged to the user. A regulatory framework that controls toll levels, toll structures, and mechanisms for increasing tolls through time is required.
- **Technical Standards.** Government will wish to control the standards to which roads are designed and constructed, to ensure they comply with safety requirements, the requirements for transport services, and that they can be integrated effectively with

other expressways and roads. For example, if government determines that buses should use expressways at low tariffs - to assist low-income travelers, then the expressway has to be designed for bus stopping-places, and convenient access at junctions.

- **Profits.** In order to prevent monopoly profits, the regulatory framework might specify maximum profits, but at the risk of stifling the entrepreneurial activity of a concessionaire. However, if as usual, the public sector is involved in funding a project jointly with the private sector, then a profit-sharing mechanism would need to be agreed. This paradoxically helps both parties - because it is embarrassing for government when projects are known to be too profitable: Was the contract let fairly? Why was this not foreseen? etc.

4. Costs, Tariffs, and Integration

a. Costs

The costs of constructing expressways have been reviewed on the basis of the case study and other evidence, from Asia and elsewhere. They are (with the exception of PRC, as previously noted) high, and typically as follows:

Expressway	Cost per kilometer US\$ million	
	Range	Typical
Urban	15-50	25
Inter-urban	3-10	5

Thus a 15-kilometer expressway will typically cost US\$400 million if urban, and US\$75 million if inter-urban.

Operating costs comprise: operation of tolling stations, traffic management, facilities management, maybe policing, routine maintenance and resurfacing/rehabilitation/reconstruction as necessary. These costs are, relative to the initial costs, not high. They may amount to 15 percent of the annual gross revenues.

b. Tariffs

Economic efficiency requires beneficiaries to meet the marginal economic costs of the service, where marginal includes the capital cost of new roads. This would lead to:

- Tariffs by vehicle type, depending on their contribution to pavement deterioration and congestion (if traffic levels approached the expressway capacity, tolls would increase).
- Tariffs targeting the poor, and adjusted for pollution - if these are important government objective. This could translate to low tariffs for buses (assuming first that the bus market is competitive).

Concessionaires attempt to base tariffs on: the financing imperatives – of early payback, given the willingness-to-pay of users. One might think that they would be motivated to maximize traffic (and thereby also serve economic objectives), but this is not always so. Rather, they seek to maximize net revenue, which can mean excluding trucks by design, and certainly targeting the higher-income users.

The normal practice in determining expressway tariffs is as follows:

- The preferred bidder will play the key role in setting tolls at levels he believes to be revenue-maximizing, i.e., in pursuit of financial objectives.
- Tolls tend to follow international experience with a toll rate for cars of US\$0.05 — US\$0.1 per km and higher tolls for trucks.
- The largest trucks with 4+ axles and buses, tend to pay a toll of three to four times the car toll.
- Tolls are set at revenue-maximizing levels from the outset, causing lower value, nonbusiness trips to use parallel non-tolled routes and very often pricing trucks off the expressway also.
- There is usually an inflation-based escalation clause, but real increases in tolls (e.g., in excess of the rate of inflation) are often not permitted.

Tolls, which are central to delivering government's policy objectives, are rarely considered by governments as a policy tool – instead, they are defined by bidders against a government requirement to minimize the tolls. It is not clear that this best achieves government's objectives, for example:

- Tolls that are too high lead to under-use of the expressway, contrary to transport objectives. This is a common occurrence.
- Tolls that are too low (and cannot be increased) lead to congested expressways, which defeat their original purpose.
- Tolls that are too high for trucks result in them avoiding the expressway, instead continuing travel through towns etc.
- Low tolls for buses can result in huge benefits for low-income travelers – usually a government objective, but only implemented in Malaysia, to our knowledge.
- Tolls do not vary by time of day/week, yet congestion on many inter-urban expressways usually does. Maybe higher tolls at congested times would be desirable.

This private sector-led, *ad hoc* practice may not suit anybody's best interest.

c. Integration Requirements

There are several forms of integration. They can hugely affect expressway traffic and therefore benefits and revenues. All require government to define its policy - but few governments (yet) do this effectively:

- The expressway must be physically integrated with the existing corridor and area. Junctions must be located (or be capable of location) at the right places — to serve present and future requirements - i.e., government must specify its requirements, the concessionaire will be concerned mainly in the short-term.
- Expressways must be linked effectively with the existing road network, allowing convenient access and regress. Often this requires road improvements and traffic management outside the expressway site, something government must implement. Increasingly, it should involve integrated transport control with the existing road system. If special facilities are required for buses, these need to be designed from the outset.
- Expressways must themselves be physically linked.
- The tolling technology of different expressways should at least be compatible. This would allow each to charge different tariffs, but be more attractive to the driver — with less stopping and queuing to pay (this is already a problem in the Klang Valley in Malaysia); and desirably easier payment through the introduction of electronic tolling.
- Possibly, the tariffs of different expressways could be integrated into a common tariff system. This requires a central revenue collection and allocation mechanism and is obviously not easy to implement - but it will become much easier when electronic tolling becomes widespread. The benefit would be substantial — increased traffic on the system as a whole, as routes are not distorted by different tariffs for each expressway.

5. Social and Environmental Impacts

There is current concern in ADB and elsewhere about the impact of private sector-led transport infrastructure on social equity and the environment. On the one hand, has it harmed these core objectives, and on the other, have opportunities to promote the social and environmental agenda been missed?

- **Land acquisition and relocation** – the evidence here is reassuring: due processes for securing land, and relocating and compensating affected families have generally been respected.
- **Serving development objectives** - in some cases³⁸ the objectives of the road are not well defined. Are inter-urban roads or roads near the urban periphery required to

³⁸ ADB is currently addressing this issue in PRC in the context of the substantial lending programme for expressways.

bring land into efficient development, or to serve longer-distance 'through' traffic? If this question is left to the concessionaire, he will focus on the existing major traffic generators and attractors. The issue reverts to the need for government to identify such major projects, including the location of interchanges, and the access infrastructure.

- **Policy for lower-income** – Malaysia has demonstrated that by the simple expedient of keeping bus tariffs low, and designing separate facilities for motor-cycles, lower income passengers benefit, without major detriment to project finances. They would benefit more if the accesses at interchanges were designed with bus access and stopping in mind. This requires government to set policy. With this isolated exception, we are unaware of any such policies being applied anywhere.
- **Visual impact and severance** - the BOT policy as implemented in many big cities is creating an elevated spaghetti of structures. The visual impact does not appear to cause the concern that it would in, say, Europe. Severance is clearly often a major problem which is rarely addressed.

The conclusion, based upon the evidence, is that the concern about social and environmental impacts is opposite. Much could be done to align such projects better with government's stated objectives.

6. Ensuring value for money

Governments need to ensure they are getting value for money from expressways, whether or not the public sector contributes to their funding. In practice, the public sector is likely to have to make a substantial contribution. Governments also need to be sure that any public sector contribution is a priority use of scarce public funds. Establishing performance against this criterion is necessary both as part of the normal audit role of government, and to inform future policy in the light of experience.

Governments therefore need to:

- Identify, structure and procure PSP projects, using best-practice guidelines such as those established in this technical assistance.
- Make use of public sector comparators (a database of expressway unit costs would be a valuable input to this process) to ensure that the bidders' cost estimates represent a gain over having the project commissioned as a public sector project.
- Establish the economic value-for-money of expressways - through before-and-after studies.

D. Identification

1. Introduction

Identification is the process which allows government to:

- Determine strategy.
- Identify projects for priority implementation.

- Determine the role for the private sector.
- Specify key features of the project that affect its priority in the roads program.

To be meaningful, the results of these activities must be accepted widely. The process of carrying them out must have the right institutional setting if they are to achieve this essential support. It is for example, not unusual for major transport studies undertaken by one ministry to be ignored by others, whose support is necessary for implementation.

Identification must:

- Determine the overall transport strategy in the context of government's development strategy/ plan. This comprises transport policies, investment in projects, and institutional components. For cities, and for some other corridors/areas the strategy will be multi-modal, defining the role of road sector improvements in overall strategy.
- Determine the core projects of the roads sector, which could be implemented as PSP projects. Guard against other projects - which may conflict with the transport strategy.
- For these priority PSP projects, prepare feasibility studies, with a focus on economic viability, implementability and fundability. Government must confirm that permissions can be obtained, that necessary land can be acquired, and people relocated. The project vertical alignment (if relevant) must be acceptable on environmental grounds.
- Define how the project is to be integrated into the transport system: defining the location/nature of physical interchanges, and the required impact on the capacity of the existing road.
- Define the tariffs, which must be socially acceptable. These materially affect economic viability, and must be considered at this identification stage.
- Define special requirements - for example access for buses (hence for low-income travelers - these impose special design requirements) and their tariffs.
- Determine the broad risks and scale of government support (investment and guarantees) that will be necessary.

2. The Importance of Identification

Identification is particularly important in the land transport sector. Not all projects are good — an expressway in the wrong location can cause enormous problems — hence, identifying the right project is important:

- For example in a big city, it is conventional for mass transit to be improved down radial roads to the city center, with expressways serving circumferential movements, which are less easily catered for by public transport. But if expressways are instead built to/through city centers, the strategy is fundamentally undermined, and there is no prospect of controlling traffic congestion — Bangkok suffers from this problem.
- If too many expressways are built, the strategy is similarly undermined. Again in Bangkok this occurs: in the northern corridor, the Second-Stage Expressway System, the Don Muang Tollway and Hopewell have been developed by different sponsoring

agencies 'in competition'. Second Stage Expressway System was opened first and is successful; the Don Muang Tollway was second and has had huge problems - Government now owns part of the equity; while the Hopewell project which was third has been abandoned while part-completed.

Major road projects must be integrated in the network. This requires positive action both in the corridor and adjacent to it. If expressway junctions are not in the right place, or interchange designs are poor, or the design/construction has not been well-devised, or provision has not been made for buses, or local road improvements necessary to provide access to the expressway have not been made - then:

- Traffic and revenues on the expressway will be lower than they should be.
- Land in the expressway corridor will not be developed efficiently.
- Traffic congestion on the existing road will remain (particularly if its capacity has been reduced by expressway construction).
- Lower income bus travelers may not benefit.

If a network of expressways is being developed through projects implemented by competing concessionaires, integration becomes particularly challenging. Physical interchange must be possible, toll equipment integration is desirable, and tariff integration may become possible. When such integration is made to happen, the network becomes more attractive to use (with less stopping/queuing to pay, and easier payment mechanisms), and traffic increases, in turn, leading to decongestion on the existing roads.

Experience is that integration does not happen when there are several concessionaires, who perceive each other as competitors. Government therefore needs to define integration requirements, and impose these on private concessionaires.

3. From Public to Private Sector Process

The typical public sector identification process of the 1970's and 1980's may be characterized as planning-led and often based upon what in insight has been an optimistic future scenario. To some extent, this approach continues today. It typically assumed that once the project(s) was identified, its implementation was a neutral process.

It typically featured, in turn, the development of the following, with decisions taken at the end of each stage:

- A development strategy — the context for.
- A transport (or roads) strategy - which allowed priority projects to be identified.
- A feasibility study of a priority expressway — this allowed government to commit to implementation.

The requirements of the planning process in the era of PSP are both unchanged, and yet very different. What is unchanged is the requirement that there must be a clear framework of objectives from which to determine strategy and identify projects, and the importance of economics and cost-effectiveness in determining what should be done. While PSP changes the impact of expressways, the resulting project is still required to be economically (as opposed to financially) viable.

The main differences are an emphasis on:

- Implementability and fundability - the public sector approach presumes that these issues can be overcome, once a good project is identified. The private sector approach recognizes the reality that these are absolutely critical - because implementation and funding of land transport projects are both very difficult.
- Acceptability - of tariffs, and of environmental impacts (particularly for elevated structures). The absence of these will prevent implementation.
- The implementation process. The presumption that, once identified, this is neutral is patently wrong. What happens during implementation has a profound effect upon the project impacts - hence on the costs and benefits of the project.
- Risk and upon developing a robust, rather than optimal project. The project environment clearly requires this, yet it is rarely addressed adequately by the public sector.
- Innovation in both process and projects. In process, to fast-track the project development cycle (which, particularly when development banks are involved, can be very long), and in projects, recognizing that the public sector does not hold a monopoly on good ideas.

These changes are unambiguously necessary. The sole issue in the new era of PSP is how best to make the change. Specifically, what are — or should be — the bounds of the public and private sectors?

4. Roles for the Public and Private Sectors

Previous sections of this report have reviewed the evidence. The firm conclusion is that while the private sector has often thought it could identify and implement expressways, this has only exceptionally proved possible. Even in UK this was thought possible, but it has failed.³⁹ And, even if this were possible, we have noted that not all projects are 'good'.

The unambiguous conclusion is that government must set policy and determine strategy. The issue then is how this is done - and how the undoubted benefits of PSP can be realized.

There is no monopoly of knowledge here, instead much experimentation, and lessons are being learned.

³⁹ Original proposals for the Birmingham Northern Relief Road, one of the first BOT proposals in UK, left the private sector to define the precise alignment, in the expectation that land holdings and associated development might determine alignment and thereby contribute to financing. The result is that government has had to define the detailed alignment, and now (10 years later) this is still being opposed and is awaiting permissions.

E. PSP Modalities

1. Introduction

There are several tasks to be undertaken in the planning and construction of expressways, as follows:

- Planning.
- Design.
- Finance.
- Land acquisition/relocation.
- Construction.
- Operation (primarily tolling, but including management of the road-checking vehicle weights, cleaning the carriageway, maintaining lighting fixtures, etc.).
- Maintenance.

In a pure public sector project, all functions are undertaken by the public sector. However, in most countries, there has already been some evolution away from force account construction, and construction is undertaken by a private construction firm, under contract. Typically, the contract is determined by the detailed (public) design and does not allow for variations except under change orders. This process requires significant levels of supervision from government and often sees substantial price rises during the course of the contract as a result of the change orders.

Private sector involvement has at least one of the objectives:

- Reduction in immediate cost to the public sector (through use of innovative construction or design techniques, tighter cost control, or risk allocation).
- Improved revenue collection, through improvement in revenue collection and through reducing the extent of revenue leakage.
- Transfer of some risk to the private sector (under the traditional construction contract, change orders leave much of the risk with the public sector and there is typically no penalty for late completion of work).
- Reduction in public sector maintenance responsibility.
- Development of private sector skills (in maintenance management, in design, etc.).
- Understanding and unbundling of requirements and priorities so that each requirement is explicitly acknowledged rather than being wrapped up (bundled) into a single all-encompassing contract, which is the normal practice under public sector provision.

It is important to note that the objective(s) are not always achieved in practice, whether as a result of poor concession design, an overriding desire to involve the private sector in provision of public services, or simply because of weak government.

Some functions will nearly always remain in the public arena. For expressways this probably only includes land acquisition and relocation. Ensuring that the practices undertaken

meet the appropriate social and environmental guidelines is important and could be difficult to monitor. The risks involved are very high and include time delays and cost escalation, as well as considerable political/public opinion risk. Since the risks are so high, transferring this role to the private sector would be costly.

2. Options for PSP

Table 17 presents the generic options for PSP, and illustrates the continuum in PSP experience that they represent. It should be noted that intermediate contract forms can be devised which include elements of more than one option.

Reading from the left, the forms of contract presented offer:

- An increasing transfer of risk and financial responsibility to the private sector.
- An increasingly large public policy commitment from government, since the contracts tend to be in place for longer periods of time.

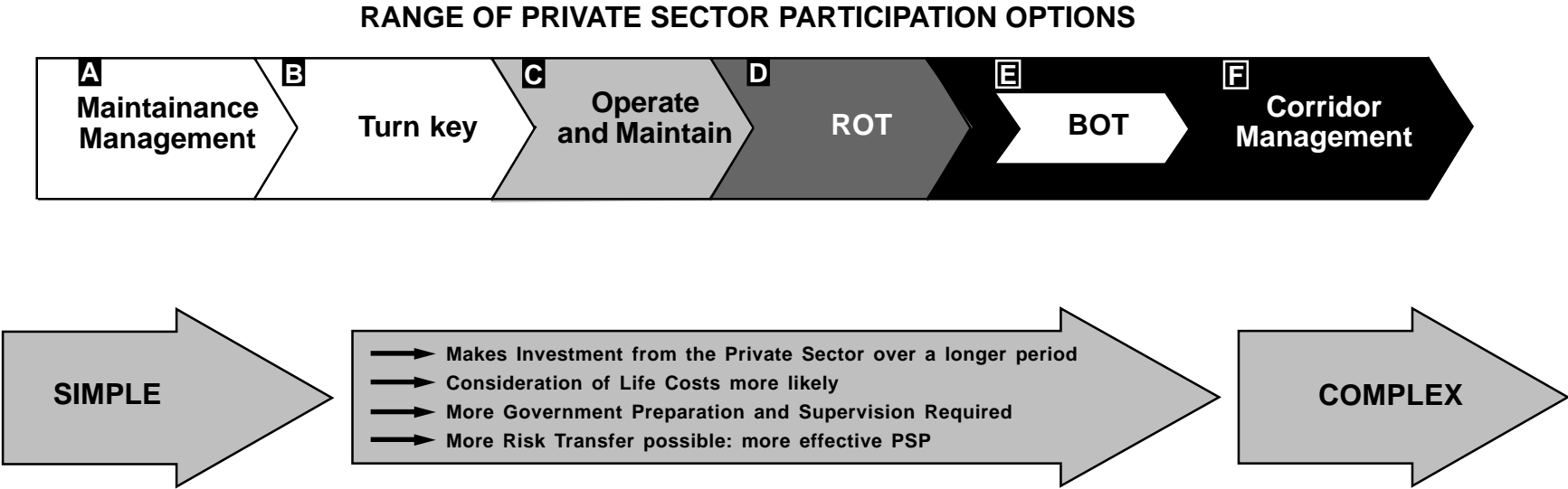
Key features of this table are:

- Not all of the risks specified are always transferred to the private sector - this is decided on a case-by-case basis.
- The contracts are performance driven. In traditional government construction contracts, the full details of procedures and quantities to be used are specified. In these contracts, by contrast, the inputs are not specified, rather the government determines the level of service which it requires (e.g., the road capacity and ride quality) and allows the private contractor to determine how it can most effectively provide those requirements. This leaves government with the role of ensuring that the services provided are as specified, and making payments or charging penalties as agreed in advance.

Table 17: Characteristics of the PSP Options

Form of Contract	Maintenance Management	Turnkey	Operate & Maintain	Rehabilitate-Operate-Transfer (ROT)	BOT	Corridor Management
Definition	Maintain Free from	Design & Build Fixed Fee from	Maintain and Operate	Finance, Rehabilitate, Maintain and Operate	Finance, Design, Construct, Maintain & Operate Corridor/Network	Finance, Design, Construct, Maintain & Operate a
Examples - see case studies	New South Wales US	US Hong Kong, China	Argentina Hong Kong, China	Argentina Colombia	Malaysia; Philippines; Thailand, Hong Kong, China Argentina, US, etc.	UK (DBFO) Colombia
Cost Recovery	No income — fixed government payment	No income - fixed government payment	Typically government receives some toll revenue	Concessionaire may pay Government or vice-versa	Substantial government investment usually required	Government contributes existing roads, and other investment usually required
Scale of Private Investment	Very low	Considerable for very short term	Low	Medium	Large/ Very Large	Medium/Large
Private Sector Risks	Maintenance	Design Construction	Traffic & revenue levels Revenue collection Political Financial Maintenance	Rehabilitation Traffic & revenue levels Revenue collection Political Financial Maintenance	Design Construction Traffic & revenue levels Revenue collection Political Financial Maintenance	Design Construction Traffic & revenue levels Revenue Collection Political Financial Maintenance
Public Sector Risks (land acquisition and relocation risks are always carried)		Force majeure Planning Traffic levels Maintenance	Revenue received Social	Force majeure Social	Planning Force Majeure Macro Social/ environmental	Planning Force Majeure Macro Social/ environmental
Typical Contract size (US\$ million)	Small	Medium/Large \$50 - \$800 m	Small/Medium	Medium/Large	Very Large c. \$100m -\$1 billion	Medium/Large c. \$90- \$300 m
Minimum size concessionaire required	Small/local construction firm	Medium/large construction firm	Construction firm with management skills	Larger construction firm with management skills	Consortium including major construction firms	Consortium incl.: a construction firm
Extent of Government preparation/supervision required	Low	High	Low	Medium	High	High
Typical Duration	2-10 years	Defined construction	2-10 years period only	10-20 years	25-30 years	25-30 years

Figure 5: Characteristics of the PSP Options



The most limited contracts, in terms of risk transfer, are those which employ the private sector for only one or two of the tasks. Typically this has been through a package of either:

Maintenance management. Management of maintenance here refers to the business of deciding what maintenance is required and when, in order to achieve the desired level of service on the road for the duration of the contract. The work may be carried out by the winner of the contract, or he may sub-contract elements to other parties, while being responsible to government for performance delivery. These are typically short-term contracts since there is no need for large investments on the part of the contractor. The government makes a defined stream of payments to the concessionaire in return for its' achieving the pavement and other standards defined in the agreement. If the standards are not achieved, then government will implement an agreed penalty schedule. Such contracts are in use in UK, New South Wales, Australia, and US.

Design and construction (turnkey contracts). These contracts require design and construction of a new facility (for which the alignment and basic construction parameters are defined) to an agreed price and timetable. Should the timetable slip, the government may levy penalties as agreed, and sometimes, early completion leads to the payment of a success fee. These contracts are often referred to as turnkey contracts, because the public sector is supplied with a facility that is ready for use and they simply need to "turn the key". Turnkey contracts have been used extensively in the US.

In both of the above cases, the contracts are performance based and there can be significant penalties for under performance on the part of the contractor. These two options are also particularly applicable where government does not wish to allow tolls to be levied; instead it pays the private sector on a fixed-fee lump sum basis.

Packaging elements together reduces the private sector risk, since they have direct control over important interfaces. This reduces the cost to the public sector.

Full performance based, **operate and maintain contracts** are the next in the hierarchy of private sector involvement. Some parts of the network are maintained under this type of contract in Argentina. The contracts involve specified maintenance standards and collection of tolls from traffic at agreed toll rates. The toll revenues will typically be collected and retained by the contractor.

These revenues may be sufficient to cover toll collection and maintenance costs and the contractors profit, and result in a payment to government. The revenue threshold above which payment will be made to government is usually defined in the concession agreement.

The three options so far described can be particularly applicable where:

- Capital markets are not well developed (and therefore there is no access to long term debt - so that the private sector could not take on a full BOT style contract).
- The government is concerned about private capacity to undertake more comprehensive contracts and/or its capacity to administer them.

In some cases, where the road network is of particularly poor quality, resulting from many years of under-funded or ineffective maintenance, rehabilitation is added to the operate and maintain contracts. These are known as **ROT contracts**.

These require larger scale investments from the concessionaire. The standard of road surface required is defined in the concession agreement and must usually be achieved within a defined period of the contract commencing; before this time, tolls cannot be levied. The toll levels are defined in the agreement (with escalation rates) and this revenue is used to finance the rehabilitation, maintenance and operation. Depending on the degree of rehabilitation work required, and the traffic revenues, some government financial assistance may also be necessary. In this case, contracts can be designed to allow governments to share in the upside potential as well.

ROT contracts are of slightly longer duration than the simple maintain and operate arrangement, because of the need to re-coup the higher costs of rehabilitation. Such contracts have been used widely in Argentina. Their basic advantage is that good rehabilitation is necessary to minimize future maintenance to which the concessionaire is also committed (he aims to minimize his total cost).

Next in the hierarchy of transferring responsibility are the **BOT style contracts**. These cover design, finance, construction, operation, and maintenance. This has been the preferred option in Asia. These are very large projects in which the government and private sector agree the principles for construction, maintenance, and management of a new facility which is then provided by the concessionaire. Tolls are charged in order to finance the construction and where necessary (given the traffic, revenue, and construction costs) these are supplemented by government. Again, the government may share in the upside potential of the project. At the end of the long concession period, the road usually reverts to the government at no cost.

The final contract form is **corridor management**. This represents a combination of the operate and maintain (or ROT) and BOT contracts. The private sector takes responsibility for a road corridor or a defined part of the road network. He is required to operate and maintain these existing facilities and expand capacity as defined by government (widening or constructing new links).

This approach allows government to pass responsibility for the management and capacity expansion of whole corridors or areas of the road network to the private sector. The contractor may be given incentive payments on achieving performance standards (e.g., a reduction of accidents, or minimizing lane closures as in the UK DBFO); and be required to pay penalties where agreed performance is not achieved.

These latter contract forms allow government to transfer many risks to the private sector, while gaining a road which it has planned for the national network. However in practice, the extent of risk transfer will depend on:

- The relative strength at negotiation of the concessionaire and government.
- The confidence with which toll revenues and construction costs can be predicted.

3. Ownership

Under the BOT and corridor management forms, there are two principal ownership options for the infrastructure:

- Ownership can be transferred on completion of construction to the public sector — under a sale and lease back arrangement.
- Ownership can remain with the private sector for the duration of the concession and then be transferred to the public sector (with or without a payment).

Under the first of these options (a Build-Lease-Transfer arrangement), the public sector will operate the infrastructure for the duration of the concession, making lease payments to the private sector construction company. This is an evolution from the simple turnkey structure by which the government makes use of private sector financing for construction. The concept can be supplemented by a maintenance and operation contract awarded by the government, under the terms of which the lease payment obligations are transferred to the operations and maintenance contractor.

The optimum ownership solution for each situation depends on local circumstances, including:

- Structure of the concession company.
- Local taxation arrangements.
- Profitability of the expressway (and hence tax liability).
- Duration of the concession.

4. Planning

The most comprehensive transfer of risk and financial responsibility can be achieved when the private sector also undertakes the planning of the project. These are known as unsolicited bids to governments and are relatively common in some Asian countries. Their advantages are that the private sector can be expected to carry all traffic risks (since it has advocated a project). Their disadvantages lie in:

- Their questionable cost effectiveness if, as often happens in practice, they are not effectively integrated into the existing road network.
- The additional costs that the government may carry in providing supporting infrastructure (access roads, etc.).
- The disruption to the network which has been planned by government, of which the proposed project may not be part. These network effects can be significant.

The Don Muang expressway in Thailand represents a clear example of failure to acknowledge these difficulties. In the concession agreement, the Government undertook to remove flyovers on the parallel existing road (reconstructing them to carry cross-traffic). However, this did not happen and there was a delay of over two years, leading to significant under-use of the expressway. This was a principal cause of the near bankruptcy of the concession company and the need for a large cash injection from Government.

F. Legal and Regulatory Framework

1. Legal

PSP in the provision of public services has been limited until the last decade or so. This means that often the legal arrangements of a country have not yet been adapted to the requirements of private sector provision. In their absence — or the absence of their implementation, corruption has sometimes emerged to undermine the benefits of PSP.

a. Why should Government be concerned with the Legal Environment?

Governments must seek to ensure that the objectives they have determined for the concession are achieved. This can only be done if the legal framework allows it. Without an appropriate legal code in place, governments may find themselves challenged in the courts and the process halted; there are several recent examples of this. Also, governments wish to ensure that competition is maximized — to reduce the price of the contract; and that can only be done by ensuring that potential bidders are not dissuaded because of the fear of inequitable treatment under the law.

Government needs to ensure that under the law:

- Concessions are permitted (i.e., that government can transfer the right of construction and maintenance to a private party).
- Tolling for use of public facilities, and tolling by the private sector, is permitted.
- Exclusivity (where granted) is permitted.
- Responsibilities are clearly divided between departments and levels of government (local, regional, or national), and that these different roles are co-ordinated, so that approvals are given effectively.
- The legal framework in all areas - such as contract, land, or financial law (e.g., currency convertibility and profit repatriation arrangements) - allows national and international companies to compete on an equitable basis. Labor and tax and immigration laws are all important.

b. Why should a Potential Bidder be concerned with the Legal Environment?

Bidding for BOT projects is costly — US\$5 million is not unusual for a winning bidder in an efficient environment, and more where the BOT process is not well-developed. A stable policy and legal environment reduces these costs (which at the end of the day are usually borne by government through the contract price) and encourages keen competition.

Since concessions typically include fixed delivery dates, concessionaires need to ensure that they can meet those dates. If permits or approvals are held up in government, because responsibilities are not clear, they may default on the contract despite their best efforts. Similarly, a court challenge to the legality of their contract, even if eventually overcome, poses financial cash flow difficulties for the concessionaire.

Concessionaires are seeking to earn a return on their investment. They need to be reassured that they will be able to earn such a return and that they will then be able to repatriate the profits if appropriate.

Different private sector players will require different levels of assurance (depending in large part on their country of origin). However, their basic requirements will include reassurance that:

- The appropriate processes are in place to ensure that permits and approvals can be secured when needed and that government can meet its obligations.
- Their corporate structure is permitted Under the existing law.
- Currency is convertible and profits can be repatriated.
- Employment (including immigration), environmental, and safety laws are clear and reasonable.
- Land law is compatible with the concession arrangements.
- Accounting laws are known so that they can forecast the project financial return reliably.
- The dispute resolution mechanisms are clear and provide reassurance.

c. General Concessioning Law or Sector Specific Legislation?

Once governments have determined that they will change laws to achieve a satisfactory concessioning environment, they may opt to make these changes globally, through a general concessioning law which specifies the basic framework for PSP, or act at sector level. Regional authorities also sometimes have significant power in the management of the concession process. Many of these comments apply equally at the regional and national level. With regional treatment of policy however, additional factors come into play, such as the treatment of national debts/commitments, inter-regional requirements, and sharing of experience.

Sector level treatment will always be required because of the different nature of the costs, the demand for the service, and the policy environment. Most countries select a hybrid treatment which combines a sector specific with a cross-sectoral approach. The sector level management allows different approaches to be used where appropriate and sector level expertise to be developed at the same time. The cross-sectoral aspects protect government from developing inconsistent policies, from financial over-exposure, and ensures that sectoral experience is shared.

d. International or Local Law?

Depending on the stage in development of national legal codes, and the extent to which international participation is desired, international legal codes may be invoked. Using international law can give foreign investors confidence that they will be treated equitably by the government. The use of local law, with which a foreign company may be unfamiliar, can increase the price of the contract to government, as the risks are perceived to be greater by the foreign bidder.

International laws are most often adopted for dispute resolution. Governments must ensure that any arbitral awards are recognizable under the national legal codes. Concessionaires will want to be assured that the awards are enforced in practice.

e. The Concession Agreement

Despite the need for these specific legal arrangements, the concession agreement specifies the rights and obligations of each party. This is the key legal document. It does not matter what has been said in the months (or years) of negotiation, or what has been written in the past — the critical requirement is that the final agreement is understood and acceptable to the parties; for it defines their contractual rights and obligations, typically for 25-30 years.

Both governments 'and private sector operators therefore need to take the concession agreement very seriously, since it is here that much of their protection lies. The document embodies the principles which they have discussed over the period of negotiation. It is vital that everything is included in that document. Both sides will therefore want to employ skilled lawyers to help them get the most advantageous agreement. This probably means that they will require both international and national lawyers, each bringing different perspectives and expertise to the negotiations. Governments, in particular, are often unable to do this, and are seriously disadvantaged as a result.

Obviously the larger the contract, the more important the agreement. Where these concession agreements last for 30 years, there are many more eventualities to be considered than those which cover only a two-year period. As well as this, the longer the period, the more complicated the financial arrangements are likely to be — this in itself puts more strains on the legal structures.

f. Legal Arrangements in the Case Study Countries

Table 18 presents the legal and regulatory arrangements in place in each of the case study countries. Each has adopted a different legal approach. The Philippines has the most defined legal environment (having passed two BOT laws) while Malaysia has no specific legislation; and Hong Kong, China; defines new legislation (an ordinance) for each project.

The absence of a clear legal framework and BOT process has resulted in little international interest in the expressway projects in Malaysia; however it is important to note that building up local private sector players was one of the government's key objectives for their concessioning program. On this criterion the lack of a defined legal environment has not prevented success.

Table 18: Legal and Regulatory Responsibilities in the Case Study Countries

Country	Relevant Laws	National or Regional Level Management	Sector Specific or Multi-sectoral Management	Level of International Interest/Involvement
Philippines	1977 TAB Law “Authorizing the establishment of toll facilities on public improvements” 1990 BOT law 1994 Amended BOT law	National (NEDA)	Multi-sectoral co-ordination and approval (NEDA - ICC) Multi-sectoral implementation assistance and international responsibilities (BOT Center) Sector specific tariff regulation (TAB) Sector specific technical review (DPWH)	Medium-High
Malaysia	None	National (EPU)	Multi-sectoral decision-making and economic regulation (EPU) Sector Specific concession and technical regulation (MHA)	Low
Thailand	1993 Royal Act — framework for PSP	National - excl. Bangkok (NESDB) Bangkok (OCMRT and BMA)	Multi-sectoral planning (NESDB) Multi-sectoral decisions (Cabinet) Sector specific project development and negotiation (DOH, ETA & BMA)	Medium
Hong Kong, China	Each project requires a separate law (ordinance)	National (ExCo)	Multi-sectoral (ExCo)	High

2. Regulation⁴⁰

Competition for the award of a contract does not provide protection against the abuse of monopoly power during the operating period. While there is no simple and universal answer, a combination of the following is likely to be effective:

- The importance of the concession contract as a regulatory tool should, first and foremost, be recognized. The contract allocates risks and rewards between the private and public sector parties, by defining legal rights and obligations. Therefore a sound contract should be the starting point for any regulatory framework; this is one that exerts appropriate regulatory pressure on both parties. For example:
 - Shorter contract periods provide a useful curb on monopoly power.
 - Even for long-term contracts, short-term contracts can be employed with renewal or extension subject to meeting minimum performance requirements.
- An independent regulatory framework and regulator is usually seen to be required. This is often specified as requiring to be autonomous, separate from government, having clear and transparent procedures, and being accountable for decisions. But experience shows this formula is neither unambiguous nor cost-free. What is likely to be required is an autonomous and independent body that is also accountable. The solution in each country needs to be developed in the context of its particular characteristics. It is likely that the regulator should be part of government, but quite separate from the agency responsible for promoting, or having a direct interest in roads.
- User groups, if sufficiently empowered (e.g., through an ombudsman function or as user associations) can also exert a useful regulatory role on infrastructure providers. It should be said that this is not yet generally well developed, but could become more effective.

A government's willingness to manage the concession agreement with transparency and commitment quickly becomes clear over the course of one or two transactions. If governments act within the confines of the legal arrangements, private sector confidence grows. If governments fail to follow these ground rules, then bids for subsequent projects will include substantial risk premiums. It is this desire to ensure that competitive pressures on price are retained through the course of a privatization program which ensures government commitment to agreed processes. This is one of the reasons why private sector players tend to be more interested in a concession in a country with a program of concession projects.

⁴⁰ Regulatory activity can be divided into regulation *for* the market (covering regulation of market entry, usually by requiring entrants to bid for the right to provide services) and regulation *in* the market (curbing tendencies towards monopoly behavior). Regulation for the market is discussed in section 7.9 — Procurement. Regulation in the market is the subject of this section.

There are two basic forms of regulation: technical and economic. Each can be undertaken in two ways:

1. Enforcement of provisions laid out in a concession agreement - through contract management.
2. Establishment in the concession agreement of separate processes for regulation (more akin to a full privatization process which establishes regulatory frameworks in order to provide confidence for the private sector investors).

The options overlap in some cases where the concession agreement defines the technical principles (such as quality of the pavement) while it leaves economic issues (such as escalation of toll rates) open.

a. The Nature of a Concession Agreement

There are two different ways of looking at the concession agreement:

1. As the Regulation - the concession agreement should determine the required response, from concessionaire and government, to any situation. With this view, regulators are not needed - since regulation is through the contract (or through the courts). Typically, the government agency or its' representative, monitors the concessionaire to ensure compliance with contractual obligations. In some cases they rely primarily on information provided by the concessionaires — with some spot-checking. Contractual enforcement can be through penalty payments or reductions in government support payments defined in the concession agreement. Where there is no such prior agreement, or where these mechanisms have failed to achieve an improvement in the concessionaire's behavior, arbitration mechanisms are then used. Some contracts specify procedures for arbitration, others call on the use of local dispute resolution law and others call on international law. In these cases contract management is all that is required.
2. As a Guide to the Allocation of Responsibilities. Since concession agreements are typically in place for periods of up to 30 years, and given the dynamic environment in developing countries, it is not reasonable to expect that all eventualities have been considered during the negotiating phase. Hence with this view, the initial agreements are seen as setting the basis for future negotiations and instead present the approach to eventualities (risks or opportunities) which cannot be determined at the time of signing. In this case, procedures for re-negotiation, including where appropriate, the use of third parties and arbitrators, should be specified in the agreement.

b. Interests of the Parties

The attitudes of the concessionaire and government to such concessions are determined by their interests. Government may be assumed to be primarily concerned with the public interest, while concessionaires are often interested primarily in the short-term. Most expressway concessionaires are contractors (or a consortium dominated by the contractors), whose objective is to make construction profits and then exit as soon as financially attractive.

Their primary concerns are:

- Controlling risks during the (relatively short) implementation time.
- Having a safe exit strategy, including selling-on at a reasonable price.

This price will be determined by any or all of the terms of the concession agreement, revenue on opening, and market sentiment towards the profitability of such concessions.

Possible early exit strategies are:

- Private arrangement — finding a willing buyer.
- Floating the project company on the stock exchange - this is done in Hong Kong, China, and planned in Malaysia, but has provided no easy answer. The traffic/revenue stream on opening must be healthy.
- Defaulting on payments to government, or other obligations, and hence forcing government to resort to termination of the concession.

c. Influence of the Timing of Re-Negotiation

If the concession agreement is signed, but implementation has not occurred, the concessionaire is in a strong position — because the government does not want the major delay of re-bidding. Once the project is operational however, the government is in a strong position: the facility exists and is used, while the investors have so far received no return.

The investors are then dependent on arrangements to collect or increase tariffs and for government support for the project. These arrangements are typically specified in the concession agreement, but often not adhered to by the government in practice (see Table 21). In such cases, the concessionaires tend not to walk away from the project. This is because of the investments which they have made (and on which they need to reap a return), and in many Asian countries the view that the government would not let them down in the end and hence that profits will be made eventually.

d. Incentives for Government

While most governments would claim that they view the concession agreement as the regulation, there are few examples of this being the case. There are strong incentives for governments to view the concession as a guide in practice, yet claim that the concession agreement is binding.

e. Government Incentives to Re-Negotiate

Government has many incentives in practice to renegotiate (avoiding re-bidding) when ‘things go wrong’:

- Governments enter into the arrangement because they perceive that the infrastructure is important for the development of their country. If, through minor renegotiation, they can still achieve this objective then re-negotiation is likely to be preferred.

- Once the concession agreement has been signed there are substantial sunk costs for the government and there is a trade-off between incurring more costs from re-bidding, including delay to the project, and incurring more costs through providing better conditions for the concessionaire through re-negotiation.
- A government may well take the view that if the concessionaire is in difficulty then if it were to have undertaken the project as a public sector project with the same conditions, it too would have been in difficulty.
- Re-negotiation may allow the government to reap the benefits of new technologies which were not feasible at the time at which the contract was signed. For expressways, this may apply to tolling options where government is seeking to develop an expressway network, which requires common technology across the different projects within the network. In this case, without re-negotiation, the network may be inefficiently used for a generation.
- It may be realistic and cheaper to separately provide for re-negotiation in the event of extreme circumstances which could not be reasonably foreseen, e.g., economic crises. The alternatives are:
 - Force the concessionaire to accommodate all risks within the bid and therefore to inflate the price of the concession — which is unrealistic.
 - If government is unwilling to accept such possibilities, the concessionaire may simply ignore the down-side risk, taking the view that in these circumstances government will have to renegotiate — an approach which ignores reasonable risk allocation.
- Where the government plans to extend the expressway operated by a concessionaire, he may have the first option to bid. Government can then capture part of any unexpected profits made on the first concession, through renegotiating that agreement and extending it to incorporate the extension.
- However, concessions are awarded through a competitive process. In this situation, if the conditions under which the award was made are later changed, losing bidders are liable to challenge the legality of such subsequent changes. They may well claim that the government would have secured better value for money had it selected their “reasonable and realistic” bid in the first instance.

f. Incentives for Concessionaires

For concessionaires, there are several conflicting considerations:

- They may feel less confident that a future government will deal with them fairly, hence they would argue for a fixed concession agreement from the outset. Otherwise, each new government represents a new set of risks for the concessionaire.
- Once the concession agreement is signed, the concessionaire is in a strong position until the project has been built. Negotiations during this period may allow the concessionaire to achieve an improved outcome.

- The concessionaire may recognize that not all eventualities can be foreseen or provided for under the agreement, and therefore may be prepared to carry the risk of arguing for re-negotiation in the case of abnormal events, rather than lose the concession.
- Where government wishes to impose change after the event (e.g., in respect to compatible tolling equipment to increase use of the expressway network as a whole), the concessionaire may be willing to negotiate on the basis of an assessment of the impact of the change on his commercial position.

Also:

- Where governments are weak then the concession agreement may need to be strong in order for the concessionaire to secure debt financing (and vice versa).
- Where the private sector firm has international exposure and a good reputation, arguments in favor of a flexible concession can be made. The danger of losing reputation may be sufficient to control the concessionaires behavior.
- However, international contractors also have international experience which they bring to the negotiating table. This allows them to drive a hard bargain. Therefore, the government may not want to reopen negotiations if it has initially secured most of its requirements.

g. Regulatory/Contract Management Arrangements for Private Expressways

Depending on the structure of the concession contract, contract management may be as important as the regulatory institutions.

Contract Management covers technical issues such as:

- Land acquisition and clearance procedures.
- Pavement quality and capacity availability.
- Toll escalation mechanisms.
- Toll plaza availability/revenue collection methodologies.
- Safety management systems.
- Environmental policies.
- Vehicle weighing stations.
- Collection of traffic data.
- Commercial activities.
- Payments to government.

Control authorities are usually an arm of the road sector agencies. They often rely on information provided by concessionaires (checking it can be difficult). Reporting requirements for the concessionaire are usually established in the agreement, and include access to financial information of the company, quarterly reports on traffic levels, road availability, maintenance undertaken, revenues, etc. The control authority is often the manager of public relations — the public can be an important source of information on the basis of which the authority will act.

Regulatory bodies are concerned with economic regulation and may be involved when:

- The tariffs are to be changed — if there is no agreed formula, but a maximum rate of return is permitted, for example, it will be the regulator's responsibility to establish whether or not that threshold has been reached.
- The concessionaire calls for further government support for the project.
- The concessionaire seeks to extend/widen the road.

Table 18 presented the relevant laws and the managerial/regulatory framework for the case study countries. It shows that most case study governments have selected a hybrid including both sector specific and multi-sectoral arrangements — usually maintaining economic regulation/management in a multi-sectoral body and allowing technical regulation/management to take place at sector level.

National rather than local management has been the norm too — which reflects in part, the weakness of the local government but also the undeveloped nature of local institutions.

G. Structuring the Public-Private Partnership

Structuring is the process of allocating risks associated with a project and project environment in the light of the interests of the key parties such that an acceptable agreement can be reached. The result is the legally-binding concession agreement that will bind the parties together for up to a generation or more.

Public-private partnerships are often perceived as the way by which the potential excesses of private sector ownership, operation and management of public infrastructure can be controlled by the public sector's interest in economic efficiency, equity, and the public good. In fact, there is very little theory, practice or experience that can be adduced to demonstrate its feasibility or efficacy. The PPP "model" is not the only method for the introduction of PSP, which is more appropriately characterized as the transfer of specific obligations to the private sector for the provision of infrastructure on agreed terms and determined under conditions of competition.

The appropriate structure for the introduction of PSP depends on an understanding of the identity and motivations of the various participants, the objectives that PSP is seeking to promote, the choice of PSP modality and, the necessary conditions being present.

1. The Key Stakeholders

Stakeholders in the PSP of an expressway, their interests and how they are impacted by PSP are set out in Table 19.

Table 19: Stakeholder Analysis of Parties to an Expressway BOT

Stakeholder	Stakeholder Interest	How Impacted: +? or --?
Public Sector		
Politicians	To improve economic growth, standards of living, quality of life	+ PSP though to deliver domestic and international funding for expressway projects -- Lose some control of major infrastructure projects -- Problem of introducing direct user charges (e.g., tolls)
Ministry of Transport and officials	To improve quality and efficiency of transport.	-- Threatened by the uncertainty of handling over responsibility of highways to the private sector to be financed by way of tolls
Department of Highways and officials	To improve highway transport	--Threat to their continued role in planning, designing, building and operating roads.
Ministry of Finance	To protect the revenue base, and avoid inefficient financing of infrastructure	-- Need to provide cash or guarantees in support of private sector + Possibility of additionally
Private Sector		
Project Sponsor	To obtain/win a profitable concession	+ Expand profitably, if successful
Contractors	To obtain/win a profitable construction contract	+ Expand profitably, if successful
Expressway Operator	To obtain/win a profitable tolling, operation and maintenance contract	+ Expand profitably, if successful
T A Providers/Advisors	To profitably provide TA	+ Expand profitably, if profitable
Financial Sector		
Banks	To finance a "bankable" project	+ Expand asset portfolio, if successful
Institutional Investors	To invest in new sectors of the economy	+ Expand asset portfolio, if successful
International Financial	To dispense development finance, secure developmental benefits	+ Justify role as development financiers
Others		
Users	To have access to higher service roads, lower journey times, at affordable costs	+ Improved accessibility -- Threat of increased travel costs
Others affected on Competing routes	To be no worse off	-- To avoid costs imposed by diversion
Others affected on Existing route	To be no worse off	--To avoid costs imposed through imposition of tolls

The principal conclusions are that:

- PSP involves many more players than the traditional way in which expressways have been procured.
- Transfer of risk from the public to the private sector is likely to be of more positive interest to the private than the public sector, which is more likely to be adversely affected.
- The introduction of PSP in this sector involves the public sector giving up its traditional role of provider, designer, builder, operator and maintainer, and financier. Under PSP the public sector's role is that of intelligent procurer on behalf of clients who have limited experience of the service, and where the public interest may be difficult to define.

This is a very different role for government, which is not accustomed to the identification and allocation of risks. Traditionally, all risks have been 'bundled together', and governments have often been either unaware of, or uninterested in them. Wherever PSP is introduced and practiced, whether in the developed or developing world, the realization of this difference is the key issue that must be understood for PSP to proceed.

2. Key Conditions for Risk Transfer

Infrastructure-wide studies in PSP have shown that there are four key conditions which determine the level and type of PSP that is feasible. These conditions must be present to ensure that PSP is feasible and deliverable. They are:

- Political commitment and stakeholder support to ensure sufficient of the participants support the transfer of risk.
- Financial feasibility and degree of cost recovery to ensure the project is capable of being financially self-sufficient over its life.
- Information about the technology employed and the state of the assets so that informed decisions can be taken as to the value of the assets, and the costs of expanding or restoring them.
- Presence of a regulatory and monitoring framework that will protect the users from exploitation of a temporary monopoly and provide a basis for the measurement of improvement of performance, etc.

The greater the obligations or risks to be transferred, the greater these conditions must be present to ensure the effectiveness of the chosen modality of PSP. Thus, maintenance management contracts require the conditions to be present, but at less onerous levels than for BOT and corridor management concessions.

Experience from developed countries (and in particular Europe) has highlighted the enormous challenge of building tolled expressways in terms of the costs and the risks involved. This experience has demonstrated the ambitious nature of many plans in developing and transitional states, and provides encouragement to start with less onerous forms of PSP to ensure greater success.

3. Risk Identification and Allocation

Many risks and responsibilities in the highway sector are capable of very clear definition. Design standards for structures and highway surfaces are capable of high levels of measurement and definition. Technical specifications, maintenance cycles, and traffic levels can be precisely specified. The impact of the introduction of tolling can be measured.

For new construction, there are greater unknowns; capital costs of new vehicle crossings, bridges or tunnels, the impact of soil conditions on new construction, and the timing of phased capacity expansion contain higher levels of uncertainty. These characteristics of the roads sector emphasize the case for allocating measurable risks to private sector participants as the best way of gaining acceptance of the approach, and ensuring the costs of allocation and transfer are minimized.

It is a principal of project finance that risks are allocated to the party best able to manage them. Diversion from this principle will lead to sub-optimality, and result in higher than necessary prices for risk transfer.

a. Expressway Risks

Table 20 summarizes the risks which are typically faced on a PSP expressway. Naturally some apply only to the more ambitious forms, but all are present on many. The list is not meant to be exhaustive, but to illustrate the scale of the problem in allocating and managing risk.

Table 20: PSP Expressway Risks

Risk Category	Description
Design	<ul style="list-style-type: none"> • Cost of re-design resulting from poor initial design • Increased construction or maintenance costs due to initial design assumptions • Incorrect geotechnical assumptions at design stage • Planning permissions • Site clearance • Failure of designer • Government-imposed changes • Non-compliance with specifications • Designer the scapegoat when things go wrong • Approvals procedure leads to increasing costs
Construction	<ul style="list-style-type: none"> • Unforeseen preparation costs • Safety requirements not foreseen • Materials used cause unforeseen maintenance costs • Interference from third parties e.g., protesters • Unforeseen ground conditions • Unexpected impact of environmental regulations • Land contamination • Noise restraining orders • Labor problems • Problems with quality and price of labor, materials and plant • Problems with sub-contractors • Site access problems • Adverse weather conditions • Death or injuries on site • Suspension of works • Traffic diversion problems • Drainage/flooding problems • Third part claims
Traffic and Revenue	<ul style="list-style-type: none"> • Traffic diversion lower than expected • Ramp-up longer • Few trucks use the road • Toll increases don't happen • Toll increases adversely affect traffic • Failure to improve local road access deters traffic • Improvements to other competing roads reduces traffic • Improvements to competing modes reduces traffic • Change to development plan and major concentrations of activity • Government increases taxes, duties of vehicles use • Failure of tolling equipment • Pilferage • Illegal payments to police etc. deters traffic Operational • Vandalism • Cost and overruns in tolling equipment • Corruption • Force majeure - catastrophic event (earthquake, accident etc.) • Traffic-related problems - accidents etc. • Unexpected additional costs
Maintenance	<ul style="list-style-type: none"> • Material and labor cost increases • Pavement failure to high truck use/poor design • Unexpected weather problems • Traffic management requirements increase costs • Non-compliance with maintenance requirements • Inferior workmanship
Finance/Other Risks	<ul style="list-style-type: none"> • Legislative delay • Inflation • Currency crisis • Interest rates • Insolvency of promoter, contractor or members of consortium • Inability to refinance • Expected tax allowances not forthcoming • Riot, war, invasion • Change of government • Discriminatory law changes

The major categories of risk for a tolled expressway, and the party best able to assume the risk are as follows:

b. Completion Risk

This is the risk that the project may not be completed, may be delayed or may exceed its budgeted cost. Generally:

- The government has control over land acquisition and obtaining the necessary permissions for the project, and it should assume these risks.
- The concessionaire has control over the design and construction risk, and he should bear these risks.

c. Commercial Risk

This is the risk of traffic on opening, the rate of traffic growth, users' willingness-to-pay tolls, to some extent the capacity of the road, and the cost of operations and maintenance.

The concessionaire's control over commercial risk is only partial. He can:

- Control his operations and maintenance costs effectively.
- Utilize the latest tolling technology to maximize the attraction of the facility.
- Use advertising and public information campaigns to increase awareness of the benefits of the project.
- Market the road, for example, targeting major potential users, and maybe offering concessions.
- Lower toll rates when they are too high, to increase market penetration. Concessionaires are, however, reluctant to do this, perceiving that once reduced, they may forego the prospect of increasing the tolls later to compensate.

But the main traffic risk remains. First is the risk of producing good traffic forecasts - often they are seen not to be good. Second, the forecasts are dependent upon factors which are substantially outside the control of the concessionaire.

There are many examples of concessionaires taking the traffic risk, and then failing. It is increasingly recognized that, particularly for green-field projects, where traffic is particularly uncertain, traffic risk should be shared.

One promising solution is for 'super-profits' resulting from higher than expected traffic to be shared, together with downside guarantees by government, in the event that traffic is much lower than expected. This reduces the project risk, and avoids the politically difficult accusation against government officers when faced with super-profits (that the deal may not have been let properly).

d. Financing Risks

Concessionaires use debt to leverage their equity, thereby increasing their returns. Moreover, this debt provides a mechanism for distributing risk among the parties. All project proponents face the risk of obtaining financial terms which are inferior to those expected (e.g., when interest rates are higher than expected). To a certain degree, however, concessionaires have control over the financing terms, via their negotiating skills, track record, and bankability. Financing risks should therefore be borne by the concessionaire.

e. Devaluation and Inflation

These are major risks, as the recent economic crisis has demonstrated. These are primarily within the control of government, and it is appropriate for government to assume these risks. This is normally done through incorporation in the toll escalation process.

f. Default and Force Majeure

These contract provisions have a major impact upon the risk that the concessionaire and the banks are willing to assume. For example, the Government of the Philippines insists that if the concessionaire defaults, the project be taken over by the banks. In the case of Government default, the proponent needs to be compensated. Again, in the Philippines, in some cases, the proponent agrees to be compensated for the remainder of the concession period the projected net income based on the original financial model, while in other cases, a lump-sum payment is agreed in the form of debt guaranteed by Government.

g. Tariffs and Financing

Toll rates are regulated to protect users from paying excessively high rates, and governments usually seek to keep tolls as low as possible. But this must be balanced against the imperative to finance the road. A number of issues typically arise:

- The willingness of motorists/companies to pay toll rates, and the feasibility of introducing them is determined by many factors. These include the level of existing tolls if any, and whether the existing road has hitherto been free, e.g., for people who made decisions about where to live on the basis of free roads, and then found high tolls imposed. The case is entirely different for new roads. Typically therefore tolls are low when introduced on existing roads, but can be high on new roads.
- Government should be clear about the use of the toll-road it seeks, and the tariffs should be set accordingly, and incorporated in the concession agreement. It is common experience that tolls for all traffic are too high, or that tolls for trucks are too high, or that buses are charged high tolls. It is sometimes argued that 'governments have no money' and that this is necessary. But this sometimes misses the point, for:
 - Lower tolls results in increased traffic, and often increased revenues too, and this decongests the existing roads — so everyone benefits.
 - Lower tolls for trucks will often increase revenues too, and reduce the environmental costs of trucks traveling through existing centers.

- Low tolls for buses may contribute importantly to social equity objectives, at small cost to government. The question should be what trade off between these objectives should be.
- Tariffs should be escalated, on the basis of an agreed formula. These formulae have a huge impact upon the projected return of concessionaires, and may typically take many months and iterations before agreement is reached.

h. Escalation Formulae for Toll Rates⁴¹

There are different approaches, for example:

- Return on Rate Basis – this estimates the allowable revenue. Each year operating expenses are reimbursed and the concessionaire is given a defined return on his investment, inclusive of working capital. The tariff is the allowable revenue divided by the estimated traffic at the toll plaza.
- Return on Equity – a financial model of the project is built, and the escalation formula makes provision for changes in inflation, devaluation and possibly interest rates. An allowable return is determined, based on returns for similar projects and the toll rate required to achieve this return is calculated.
- Project Return – this is as for return on equity except that it does not consider financing. The financial return is calculated assuming 100 percent equity, and the allowable project return determined, based on returns for similar projects and the toll rate required to achieve this return is calculated.

Each method has its pros and cons. These include the following issues upon which government needs to decide its position:

- Stability of the tariff over time.
- Willingness to provide traffic guarantees – it is argued above that these risks should be shared.
- Willingness to participate in financing risk – it is argued above these should normally be borne by the concessionaire.
- Provision of incentives for efficient operation – these should be provided.
- Extent of government regulation that is required. This may simply be limited to operating and maintenance standards, or it may also include checking allowable operating expenses, or may include financing.
- Ease by which the toll escalation is computed.

⁴¹ What follows describes the policy of the Government of the Philippines, described in their 'General Features of Financial Aspects of Negotiated Toll Road Agreements', dated 12/04/98.

The last project return approach is the one adopted by the Government of the Philippines. It retains the advantages of the return on equity methodology, and has the additional characteristics:

- No regulation is required relative to financing.
- The concessionaire assumes the financing risk.
- It may be wise to ensure a minimum equity commitment by the concessionaire to ensure his commitment.
- It targets a project return of 20 percent, in dollar terms. This is benchmarked against returns in other countries, and takes account of the specific circumstances in the Philippines. It provides for tax breaks in accordance with local practice.

Accordingly, implementing rules have been devised that provide a transparent basis for the calculation of tariff reviews, which may be increased annually.

4. Conclusions

Introducing PSP in the roads sector involves the transfer of obligations from the public to the private sector on terms that are negotiated under conditions of competition. Inevitably, the change can involve shifts in traditional patterns of power and control that are difficult to surrender. Experience has shown that, in many cases, PSP has yielded significant improvements in productivity, capacity expansion, and performance.

However, PSP must be targeted with the appropriate objective, otherwise sub-optimal solutions may result. Secondly, the appropriate PSP option must be chosen. Thirdly, the correct modality will be determined by the presence of the key conditions of stakeholder support, financial feasibility, regulatory and monitoring framework, and knowledge of the state of the operating assets and their current performance. Fourth, risk should be carried by the party best able to control or insure against it. The extent to which risk can be transferred in practice will depend on individual circumstances.

H. Financing

1. Introduction

Securing debt has always been a limiting factor in this sector. While many entrepreneurs (mainly contractors) have promoted projects, banks have always been wary.⁴²

The recent economic crisis has clearly exacerbated this situation considerably, and in the future:

- There is likely to be less equity - entrepreneurs that have had their fingers burned are now more cautious, and the Japanese economy has reduced the funds that contractors and trading houses have to invest abroad.

⁴² This section concerns securing private sector risk capital. In Asia there are examples of private sector capital being backed by government - this is no more than a contingent public sector liability, and does not help secure PSP objectives, through risk transfer.

- There is likely to be less debt. Asian, especially Japanese, banks have less to invest and are more careful about where they invest.

These changes are being reinforced by the general downgrading of many sovereign short and medium-term credit ratings, following the re-alignment of a number of Asian currencies.

This is a sobering background given that banks are able to invest anywhere and in any product. They will only invest in road sector concessions if the expected returns are comparable with other opportunities, given their overall portfolio strategy.

Financing comes at the end of the PSP process, but the constraints it imposes must be considered from the outset. If a sound business case has been prepared, the project risks identified and allocated in a realistic manner and the procurement process credible and well executed, then financing should follow on the basis expected. But if these preconditions do not exist it may well not be available.

2. Project Characteristics

This section looks specifically at expressway financing characteristics.

Revenues are difficult to forecast because:

- Revenues derive from tolls which must be introduced on previously free routes.
- Some traffic will be diverted by the introduction of charges. The impact on traffic volumes is difficult to forecast, and changes over time.
- Traffic levels are low initially and uncertain in the medium/long term.
- Depending on the tolling method and strategy introduced, there are many opportunities for toll avoidance, toll loss (through uncollected tolls), and toll undercharging.
- Toll levels must be affordable based upon users' willingness-to-pay.
- Toll levels can be revenue maximizing (desired by project sponsors) or socially maximizing (desired by governments to ensure the highest utilization). The objectives of the public and private sectors are always in conflict.
- Toll structures must not have the effect of discriminating against certain groups of users.
- Toll escalation mechanisms often suffer from political interference.
- Non-toll revenues – i.e., from advertising, other retailing concessions, etc are small - and yield typically perhaps five percent of total revenues.

Capital costs are lumpy and difficult to phase:

- Land acquisition costs are an important proportion of overall costs (typically 15 percent, but up to 50 percent in the center of big cities).
- Expressways must be built in anticipation of future demand.
- While there are phasing options, they are rarely exercised, and in any case many costs must be absorbed in advance, e.g., earth works, bridges, culverts, etc.
- Necessary tolling equipment, plazas etc. often involves foreign technology, and the planning, design and management process increases the requirement for foreign exchange.

Operating costs:

- Tolling, maintenance, and related costs typically amount to 15 percent of gross toll revenues, and place a substantial burden on early debt service capacity.
- A variety of additional services (lighting, communications systems, signage, safety and emergency services) are required on limited access, high service expressways.
- The existing alternative routes must still be maintained.

The resultant expressway project cash flow is typically:

- Highly dependant on traffic volume growth to repay debt.
- Burdened by large front end costs in land acquisition.
- Weakened by the possibility of the emergence of competing routes.
- Susceptible to political interference in route selection and in the toll increase mechanism.

In addition to these difficulties specific to tolled expressways, there are additional obstacles to be overcome in the financial markets and in the legal and regulatory spheres.

3. Impediments to Financing

a. Financing Obstacles

- Expressways require long term debt – 15 years or more.
- To avoid foreign exchange risk, borrowings should be in local currency. However, the capital markets of many emerging market countries do not have sufficient long-term structures; and even if the term structure is available, funds are frequently dedicated to other kinds of projects, carrying lower perceived risk.
- Inflation adds further burdens to financing costs and risks. At the extreme, high inflation precludes domestic borrowing.
- If domestic borrowing is not available, then an element of foreign funding is necessary. However, foreign borrowing is no substitute without a natural hedge.

- Foreign exchange risk for the portion of the funding borrowed in foreign currency and repayable in foreign currency must be covered in the toll; yet large shifts in currency rates can render some expressways beyond the means of the users to pay. Recent events in Asia emphasized the critical importance of this.

b. Legislative Impediments

- There are legal requirements in most countries for the availability of a free alternative route.
- There is sometimes (as in countries of the Asian sub-continent) a legal requirement for tolls to be removed after debt is repaid, leaving no dedicated funds for long-term operation and maintenance.
- There has been success in recent legal challenges to the government's right to levy tolls, in the absence of specific legislative powers to do so (this is currently an issue in Hungary).

c. Regulatory Impediments

- The absence of a regulatory framework is not always bad, however, there needs to be a body that looks after the public interest through: controlling tolls, controlling the returns to operators, and protecting against competing roads in the same corridor.
- Problems arise where there are conflicts within government for control of the regulatory function.

Given these obstacles, it is not surprising that investment by the private sector in tolled expressways has required a large element of support by the host government.

4. Government Support

Governments can improve the financial viability of expressway projects in many ways. They may do so by:

- Reducing construction costs through the grant or purchase of land, endowment of existing highway assets, the provision of other inputs, and reduction of taxes on inputs.
- Reducing the operating costs through support in the initial years.
- Increasing the returns to sponsors through corporation tax holidays on equity earnings.
- Retaining certain risks that are not transferable at a reasonable cost such as shortfall guarantees on opening traffic volumes.
- Providing guarantees for the availability and conversion of foreign exchange borrowings.
- Providing project credit guarantees, (such as traffic short fall guarantees) to the banks invited to finance the projects.

The more that actual and contingent risk is retained or absorbed by government on behalf of sponsors and banks, the lower are the PSP benefits that are believed to arise. Many of the expressway projects in Malaysia and Indonesia have depended heavily on government support, to the extent that the projects have become virtually contingent risks on the government's balance sheet. Much government support has been wrested from governments by strongly placed sponsors through superior negotiating tactics, close connections with political parties, or brinkmanship by threatening to withdraw from the project that has already begun. Some government support is neither visible nor strengthens the project (as opposed to the sponsor's investment).

The solution is neither difficult nor unavailable. Effective government support must be designed and specified at the time the project is being prepared by the relevant agency for execution. Specification and design of the support package is an integral part of establishing the financial viability of the expressway project - as fundamental as understanding the capital costs, the tolling strategy, the initial traffic volume and levels and structure of opening tolls.

The costs associated with preparing and bidding for expressway projects could be substantially reduced if the nature and quantum of government support was to be made available at the time of tendering. Very often, this is not the case, but only emerges during negotiations. Further, it should be made clear that the ministry of finance, which in most countries is the relevant authority to provide support, has agreed to the support, and that the support is available.

5. Guarantees and Insurances

There are three generic sources of guarantees and insurances:

- **Government guarantees** - from the concessionaires point-of-view these are 'free' and are always sought; but from the public sector viewpoint, they reduce the transfer of risk, and hence the basic purpose of the PSP process. Traffic volume guarantees are frequently sought by private promoters and sponsors of expressway projects (often on behalf of banks). Even if granted, however, these can be of doubtful value unless the guarantor is able to fulfill the guarantee, and the guarantor is able to exercise it. Contingent risks of many governments are only now being adequately accounted for. Many commercial banks have a much more limited appetite for sovereign risk than governments would like to think.
- **Guarantees taken out by the government, to improve the project finances and help attract finance.** Like all guarantees, these come at a cost, and the greater the risk the greater the cost. One recent innovation promoted by the international development finance institutions is to provide specific guarantees — the partial credit guarantee and the partial risk guarantee — that address specific structural problems in the ability of financial institutions to participate:
 - The partial risk guarantee, guarantees that a government-owned body, which is party to a contract, will meet its obligations under the contract. It is provided in favor of a project's lenders, where the project's output is sold to a state-owned enterprise with a weak creditworthiness. A good example is an electrical power distributor. In event of the purchaser's failure to pay, the guarantee is called, and the project lenders avoid a loan default, with all the consequences. The partial

risk guarantee has limited application to expressways, except in the case, for example, where a state-controlled highway authority with responsibility for paying support (or shadow tolls) was unable to pay.

- The partial credit guarantee is used to extend the term structure of debt. It has the effect of purchasing from project lenders the portion of the loan that is outstanding at, say, 10 years, which might be part of a loan requiring a 15-year maturity. Lenders can then commit funds for 15 years knowing that they require funding for only 10 years. This form of guarantee has applicability in those countries where a satisfactory expressway project may be established, but where the credit markets are unable to commit and fund loans for the full term.

Such guarantees are provided by ADB and the World Bank, but to date have had little take-up, in spite of several attempts to repackage them. Firstly, recipient governments are generally unwilling to counter-guarantee the grantor of the guarantee (usually a development bank) - they want cash not contingent guarantees. Secondly, there are more fundamental project-related credit issues that cannot be overcome by the guarantee route.

- **Insurances** - these are normally taken out for very infrequent but calamitous events - *force majeure*. They can help, but insurers never lose money from project finance - a large risk will, therefore, carry a high-risk premium.

The overall conclusion is that guarantees and insurances can help in putting a financing package together, but they do not make a big difference and they are not an easy solution to resolving the problems that exist.

6. Expectations of Equity and Debt Providers

Notwithstanding the difficulties outlined above, expressways continue to be planned and promoted in many emerging, industrializing, and transitional countries.

a. Equity

Sponsors or promoters of road schemes are frequently the principal equity providers. Expressways are relatively low-tech infrastructure projects, unlike power stations, telecommunications facilities, railways or airports.⁴³ Sponsors are frequently contracting companies, which themselves are not well capitalized. Their ambition is frequently to make a sufficient profit in construction, then to exit once the project is open. The returns from operating the facility over 20 to 25 years are less important to them.

Institutional investors, however, require a risk-adjusted return on their investment (usually expressed in US\$ or some other hard currency) of at least 20 percent before tax. These figures are known from the various publicly listed companies that have been floated in South East Asian markets. These levels of return are difficult to achieve on large equity investments,

⁴³ The introduction of electronic tolling considerably increases this complexity.

and are threatened by the very public source of the toll revenues that underpin them. Returns to established toll operating companies in developed markets are below this threshold, typically reaching a percentage rate of return in the mid-teens, before tax.

b. Debt

Commercial banks that are persuaded to support expressway BOT projects are driven by different requirements. Discerning banks will expect a soundly based project where the risks have been realistically identified and allocated to establish general creditworthiness. The bank will then consider the security package offered in support of the transaction in the event that the project cash flows do not materialize as planned. Finally, they will consider whether the loan fits with their strategy and portfolio, whether it can be funded, and the adequacy of the fees and pricing, e.g., the margin they will receive over the funding costs.

Banks may seek additional security, they will frequently seek a higher margin. In the final analysis, they are looking for well-structured lending opportunities where they believe the borrower will service the loan as planned, by paying the interest costs and repaying the principal at the times agreed.

7. Typical Financing Structures

Theories as to the right or appropriate financing structure abound. There are as many financing structures as there are financiable projects. The limited recourse financing structure of infrastructure tends to be a function of the shape of the cash flows available to service it and the security package offered.

The funding structure for an expressway project typically comprises:

- Bank senior debt - debt that has first call on the available cash flows (and security).
- Subordinated capital - debt with second call on cash flow and security.
- Equity - capital that is fully at risk.

a. Bank Senior Debt

In most cases, the limiting factor in financing an expressway is the amount and term of senior debt that a project is able to attract. This is usually determined by the ratio of the project cash flow to the debt service requirements. Banks often seek 1.5 times the debt service requirement. This can be reduced to a lower margin through changing the repayment schedule or providing additional security or support. Bank senior debt might typically provide 60 percent of total project costs, including interest during construction and inflation. Banks will lay down the terms and conditions on which the loans would be advanced and these would typically include the requirement that all equity should be paid into the project company before any debt is available.

b. Subordinate Capital

Frequently there is a requirement for further finance, neither debt nor equity. This gap finance is increasingly offered by the development finance organizations in support of their efforts to support PSP. In several Asian countries, investment funds are established to provide the subordinated debt. Terms typically stipulate a minimum equity contribution, a commercial

margin occasionally with a carried interest in the equity, and a counter guarantee from the host government.

c. Equity

To obtain the required return to equity, there is a tendency to risk as little as possible. The less put at risk, the higher the eventual return for the same cash flows available to the investors. Notwithstanding this, equity amounting to 20 percent of the capital costs is not an uncommon requirement. More equity will reduce the overall rate of return. Less equity will not convince the banking community that there is enough at risk to ensure the full co-operation of the investors.

A desirable capital structure might be:

- 60 percent commercial debt.
- 20 percent subordinated capital.
- 20 percent equity.

However, when the government has made a significant contribution in kind, such as an existing section of expressway or the corridor on which tolls will eventually be charged, it may retain an interest, or require a profit-sharing arrangement to be developed. This permits it to recover some return on the original public stake, or to ensure the equitable division of returns once the expressway has attained profitability.

In the final analysis, the capital structure is the result of negotiation among players with varying degrees of market and political power, influence and resources. Rarely is the structure fully efficient. Banks are often required to take risks they are unprepared for. Often, governments are forced to retain risks that reduce the benefits of PSP. The relatively few transactions that have been concluded and the long time required establishing the success of the transaction means that the costs of failure are still to be assessed.

There is much debate about whether government should hold an interest in the project company to which the risks are transferred, and in some countries (such as Indonesia), this is obligatory. Arguments for so doing include the government's need to safeguard interests and to ensure against abuses of the monopoly power of the private sector under the concession. Arguments against, include the need to ensure that the private sector toll operators' powers are sufficiently regulated in the concession agreement. In any event, the private sector cannot be expected to be responsible for social objectives that the government might wish to pursue. Continued government involvement can also lead to management inefficiencies and unresolvable conflicts of interest. The growing sophistication of concessions, monitoring and performance devices further reduces the case for a continuing role for the government in the concession company.

8. Availability, Sources and Terms of Debt

a. Availability

Reference has been made to the exchange rate and convertibility risks imposed on a project resulting from dependence in infrastructure projects on domestic revenues to repay foreign borrowings. These risks affect the project's ability to meet all its financial obligations, and dependence on foreign financing significantly reduces the number and scope of projects that might be financed compared to the situation which would exist were domestic sources of funding to be available.

High and volatile inflation rates also shorten the investment horizon and distort economic activity. Although long-term investment in a high inflation environment can be funded by loans, provided a high nominal interest is charged, inflation-adjusted interest rates are not a viable solution. In particular, they create problematic cash flows, not solved by compressing the loan repayment schedule. A record of low and stable inflation is usually required to extend a country's financial horizon. It is also a decisive factor in developing long-term fixed income securities that are so necessary in financing major infrastructure projects.

It is not surprising that the price volatility and swings in economic activity, frequently experienced in developing countries, even those growing at high rates of growth, have limited the depth and breadth in their capital and credit markets. Availability of domestic finance is therefore one of the most serious obstacles for the expansion of PSP in infrastructure throughout the developing world.

General pre-conditions for the availability of appropriate infrastructure finance are:

- A sound macro economic environment.
- Stable prices.
- Stable exchange rates.

Those countries with developed financial regulatory frameworks monitoring the capital markets (stock exchange), and credit markets, (banks) are best favored to supply appropriate infrastructure financing instruments.

b. Sources

There are four main sources of debt for infrastructure projects such as expressways:

Commercial Banks - commercial banks have played a very small role in financing infrastructure, due to the maturity structure of their liabilities. There is simply not the deposit structure to permit long-term funding on a matched basis. Commercial banks in some developing countries are the subject of interventionist policies, particularly where state-owned enterprises depend on policy-driven credit decisions. In some developing markets virtually all bank credit is allocated and governments impose controls on how bank assets are held.

The current economic crisis is expected to lead to substantial restructuring of many domestic and foreign banks in Asia. A viable project finance banking community should emerge as a result of rationalization and re-capitalization of the commercial banks.

Bonds and Bond Markets - Fixed-rate bonds are among the most suitable instruments for long-term infrastructure, provided there is sufficient stability and predictability in the project cash flows. If inflation is likely to change rapidly, investors will seek shorter terms and floating rate instruments to protect against swings in real interest.

Pre-conditions are the existence of a government bond market against which project bonds can be priced. At present, the term structures of government bond markets are limited (typically seven years), and are thin at the longer-term horizons.

Bond rating agencies and credit enhancement are ways of overcoming these deficiencies. However, investor interest in long-term project bonds, denominated in other than strong currencies, is severely limited. It is likely to require a period of stability to return in Asian project and currency markets before bonds are likely to be available for long-term project financing.

Pension Funds and Domestic Institutional Investors - A significant provider of project debt for infrastructure in Asia and South America has been the major state pension funds and contractual savings systems. Previously required to invest in government securities, permissible investments have been progressively widened to include infrastructure. Also, pension funds are increasingly permitted to invest some small part of their funds in equity rather than first ranking, secured debt.

Domestic savings institutions are likely to re-assess their exposure to projects during the present downturn in Asia. It is likely that some institutions will be reassessing their policies in the light of the performance of some of the projects. 1999 will no doubt constitute a watershed for domestic savings institutions, as they understand the impact on their portfolios of certain project failures. It will be a test for their understanding and management of project risk. They will emerge stronger as a result of the experience.

c. Conclusion

On a scale of 1 (low) to 4 (high), the short and medium-term prospects for funding in the sector from these four sources of debt may be along the following lines:

Source	Short-Term	Medium-Term
Commercial banks	1	3
Bonds	2	3
Pension Funds	3	4
Institutional investors	3	4

I. Procurement

1. Introduction

Regulatory activity can be divided into two broad categories:

- Regulation for the market – covering regulation of market entry, usually by requiring entrants to bid for the right to provide services.

- Regulation in the market – curbing tendencies towards monopoly behavior.

Regulation for the market – this is generally agreed to require open and competitive bidding. Without this, the evidence is that corruption and/or nepotism may prosper to the detriment of achieving public policy objectives.

Procurement involves:

- The development of government's business case.
- Marketing of the project to potential bidders.
- The bidding process leading to contract award and negotiation of the concession agreement.
- Supervision of implementation - until the project is operational.

Procurement in PSP is the process by which the terms and conditions on which the risks to be transferred from the public to the private sector are determined and negotiated. It is the process of achieving a PSP project in accordance with the stated objectives of the public party whilst achieving the requirements of the bidder and lenders. A project will not proceed if the latter condition is not satisfied, it should not proceed if the former condition is not satisfied. There is a requirement for a procurement process which can effectively achieve both conditions without such a drawn out and costly bureaucratic process as to dissuade bidders from participating in PSP.

Successful procurement depends upon realism and preparation, transparency, and competition, and clearly defined procedures, through the procurement framework.

Realism and preparation - some governments have, in the past, demonstrated an unjustifiable optimism that any project offered to the private sector will be enthusiastically taken up. There were also private sector players who ignored hard realities and initiated and promoted projects that from the outset would clearly not be viable candidates for public-private partnership, except with excessive public sector funding. There were investors who did not make a thorough and realistic assessment of an opportunity, resulting in their demanding unreasonably hard and safe terms or else accepting terms and conditions which would lead to failure; in either case undermining the credibility of the approach.

The financial consequences of inadequate project preparation, from a government's viewpoint, could be serious. If the technical, traffic demand or financial aspects of the project are not thoroughly investigated and understood by the government's negotiators, then the resulting concession terms could represent a bad use of public funds. On the other hand, if because of lack of preparation, government negotiators fail to recognize ways in which a project could be made to work, then the provision of vital infrastructure might be delayed.

Transparency and competition - Comprehensive procurement processes are adopted in many cases. But there are many instances where PSP projects have been progressed - by default or design - without full assessment of public interest issues and without transparency and competition. Since a government is effectively creating a form of private monopoly, albeit limited by time, caps on charges, and restrictions on prospective rates of return etc., it should normally wish to ensure transparency of process, and competition for the market the private sector will operate, to ensure the public interest is protected.

2. Procurement Frameworks

a. Common Practice

Where a component of a highway project which involves PSP is to be financed with a contribution of one of the multilateral development banks, this may determine the form of procurement - specifically there may be a requirement to procure under conditions of international competitive bidding or at least on the basis of comparable unit prices. In other cases, government procurement in many countries is determined on an *ad hoc* basis. The need for improvement is well-recognized and much is being done to develop and promote better practice.

Some of the countries which have embraced PSP, have recognized the need to overcome the reputation for bumpy playing fields and cronyism that had developed through previous regimes. Other countries which are trying to promote PSP, for example Bangladesh, India and Pakistan are continuing in their efforts to formalize policies and procedures. But much remains to be done. While the private sector is encouraged to contribute its experience and innovation in a variety of ways, the process is sometimes subverted, for example:

- The grant of concessions prior to finalizing the terms and conditions assumes that the consortium will act in the public interest.
- The type and quantum of government support the consortium might be able to negotiate might lead to some of the project risks not being transferred.
- A continuing interest that a government agency might have in the concession company, or its regulation may lead to unacceptable conflicts of interest, or inadequate competitive challenges.

b. Better Practice in Asia

The Philippines' efforts in establishing a procurement framework, introduced as part of the policy to promote PSP, provides one possible model. The process was launched in 1993 through legislation and accompanying regulations.⁴⁴ The process was linked with government's policy to attract foreign direct investment and to implement the priorities of the national development plan.

The procurement process was and is facilitated by the BOT Center, which markets projects to the private sector, and provides services and assistance to implementing agencies and to local government in the development, bidding and implementation of infrastructure projects. In this way the BOT Center supports and advises government - and helps to ensure it understands and can fulfil its undertakings, and can facilitate and influence the entry of project sponsors and financiers into the country's PSP program.

⁴⁴ Republic Act No. 7718 and its Implementing Rules and Regulations.

The procurement framework comprises the following stages:

- Project prioritization and approval.
- Marketing to bidders.
- Pre-qualification of bidders.
- Evaluation of proposals.
- Award of contract.
- Project implementation.

Regulations govern the manner and timing by which the framework is operated by the responsible line ministry. The existence (and acceptance) of the procurement framework for PSP is a substantial advantage to both *bona fide* bidders and professional civil servants, and importantly is sending the message that government requires effective procurement performance. The Philippines process - not without critics and problems in its adoption and operation - does have the following strengths:

- It promotes transparency and competition.
- It informs all parties as to the procurement process, their roles and responsibilities.
- It increases confidence and promotes credibility generally.

Because of insufficient resources and proposal evaluation skills, projects are reportedly not being prepared as thoroughly as they should. This is not a fault of the process but of its resourcing. Other concerns relate to the objectivity of the process when line ministries joint venture with the private sector, and to its susceptibility to political interference. That said, the BOT law, and the process it supports, is an effective step in introducing a more credible procurement mechanism, which is now evolving with experience.

c. Better Practice Elsewhere

It is clear from experience in the developed world that the process of public procurement is becoming increasingly important. With the UK Government's Private Finance Initiative (the policy by which private management, techniques and finance are introduced to wide areas of public economic and social infrastructure), a 14 stage procurement process has been recently adopted.⁴⁵

This process concentrates on establishing the business case for the infrastructure need, the options for both public and private sector provision, and measuring the value that the private sector solution is capable of delivering compared with the public sector alternative. There is also a specific approval of the public sector affordability of any private sector solution, and confirmation of the availability of the funding support that is required through the life of the project.

Only when a project's outputs are fully and thoroughly defined, when its value for money over the competing public option are quantified, and when the mechanisms and quantum of support is determined and secured, is the task of concession award considered. This concern

⁴⁵ *Step by Step Guide to PFI Procurement*, HM Treasury, July 1997.

with project design, risk transfer, and value for money reflects the importance attached to minimizing the costs to bidders and satisfying the government that the process avoids controversy and criticism. It could be considered in developing countries as a way of building confidence among international investors, bankers, and private sector participants.

Since UK is a member of EU, which aims to facilitate the free flow of goods and services between member states, the UK must also abide by EU procurement rules. The first stage of the tendering process is a call for interested parties to pre-qualify through the placement of an appropriate advertisement in the Official Journal of the EU.

From the pre-qualified applicant, a short list of up to seven potential bidders is then invited to tender, usually with carefully specified criteria for determining the winner. The process might invite the bidders to offer alternative methods of supplying the services, differences in phasing, or mechanisms for payment. However, they would need to be presented in a manner consistent with the compliant bids to ensure that award was based on consistent criteria.

After initial evaluation in accordance with the published criteria, a preferred bidder would be selected for the presentation and negotiation of a best and final offer. The runner up would be invited to step in, should agreement not be finalized with the preferred bidder. Once negotiations are completed, the contract or concession is awarded and the bidder proceeds to financial close, where the financing is put in place.

While considered by many to be bureaucratic and time consuming, the general advantages of this process are that it minimizes costs to bidders, and provides the procuring authority with adequate competition to protect the public interest.

3. Business Case

Only when government has prepared a demanding Business Case, will it understand the financial and risk characteristics of the project. Then, in preliminary discussion with the market (potential bidders and bankers), it will be in a position to understand how/whether risks can be allocated such that it can confirm government's willingness to proceed - given the public sector support which will be necessary, and the terms which will be necessary to attract keen bids. Only with this information can government negotiate meaningfully.

The failure to prepare an authoritative Business Case is therefore risky for government. It may lead to no project, or it may lead to an unsatisfactory agreement. Only when government technocrats are properly informed will they be confident in negotiations, and will the process be efficient. This is sought by the private sector too, they would much prefer to negotiate with an informed client than one who is not prepared.

The Business Case is specifically concerned with:

- The legal basis for a concession.
- Land - acquisition, associated resettlement, and permissions necessary for construction.
- The roles of government in implementation, operations and regulation (who does what in government).
- The revenue stream, on which financing critically depends. What are the risks? Can they be mitigated and/or supplemented?
- The risks - and developing the basis for risk allocation between the parties.
- Establishing the right balance between the key stakeholders, in the light of their interests and expectations - users, sponsors, investors, and government.
- The requirement and form of government support - in terms of financing, guarantees and other incentives.
- Establishing procedures for ensuring that the government support provides good value-for-money.

4. The Potential for Innovation

Unsolicited bids pose a particular problem, since governments usually wish to encourage private sector innovation, which is seen by the private sector as in conflict with competitive bidding. The solutions to this are typically:

- Either a formalized, tight but open competitive bidding procedure, which gives the private proponent an in-built advantage in that he tends to know more about the project than the competition (having been involved in developing it from the beginning). This has in the past been administered in Hong Kong, China to demonstrable effect.
- Or a price-matching, in which case competing bids are invited after acceptance by government of a pre-emptive proposal. If the competitive bid is better, the original proponent has the opportunity to match the terms, and contract award is made. This approach has been applied in the Philippines.

Neither of these approaches is entirely satisfactory in typical developing country environments. Very often, the project timescales stretch out without contract award, to the increasing frustration of all concerned. It is becoming clear that there should be a progressive shift towards assisting government identify potential PSP projects - which should then be subject to competitive bidding.

Typically, it has been found that government must define the route, identify the junction requirements, specify the vertical alignment (elevated/at-grade/underground), and define the land envelope needed (i.e., commit to clearing/acquiring land). The concessionaire may be given freedom to offer innovation in: design - e.g., structure versus embankment - with far-reaching environmental as well as cost consequences; in devising tolling arrangements; and in devising tariff structure.

5. Implementation

a. Access to Expert Advice

The PSP world is characterized by much specialism, and it is essential for government to have access to the same expert advice which is the norm in the private sector; yet to date, this seldom been possible.

The BOT Center approach implemented in the Philippines has been described, and this goes a considerable way to providing this expert advice in fields such as project finance, legal issues and documentation, negotiation etc. But even here, there is need for access to world-class players in many cases.

There are mechanisms to achieve this, and it is a role where development banks can play a pivotal role. For example, a PSP Fund may be set up, initially by a development bank, and thereafter sustained by allocations from the bidding process (a fixed fee per bidder, increasing towards contract award, in return for government's front-end activity identifying and preparing the project). The purpose of the fund could, for example, cover project identification, bidding and negotiation - and would enable government to access international and local experts in a responsive way. Such a fund could be for a single sector or multi-sector.

b. Marketing

It is not the case that there are many bidders and banks waiting to implement any project, quite the opposite in fact. So it is essential that the procurement process and specific projects are actively marketed to interested parties. Part of this process to understand the market sentiment to the country/sector/project, and this should help determine the terms of the bidding. The result of good marketing is stronger consortia and potentially more competition. Marketing takes the form of delivery of full technical, legislative, economic, financial, and environmental summaries to targeted parties who are likely to have an interest.

c. Documentation

The principal document to be negotiated is the Concession Agreement, which sets out the principals that determine the relationship of the Concession Company with the government entities. At the center of the concession document are the obligations and responsibilities of the parties, the term of the concession, and the basis for termination and for hand back, if a BOT.

The contents of a BOT concession typically include the following:

- General definitions – Project description, guarantees, financial model.
- Operations – Land requirements, design and construction, construction program, inspection, operations and maintenance, management, hand back, insurance, government obligations.
- Relationship and monitoring – Representatives, records, reports and information, monitoring of performance, other parties responsibilities.
- Payment mechanisms – toll levels, toll structures, escalation formula, other revenue earning enterprises.

- Changes, liabilities and terminations – Change procedure, force majeure, indemnities, default, termination, compensations.
- Miscellaneous provisions – Assignment of rights, consents, taxes, dispute resolution, waivers, amendments, governing laws etc.

Many schedules are attached which contain detailed information and data.

In addition to the concession agreement, there is usually a substantial enabling legislative task for government permitting the concession company to commence its activities, regulations to be enacted and land to be resumed or acquired. Following the award of the concession, the concession company's major task is securing the financing which prior to then has been studied and may have been underwritten on a contingent basis.

d. Bidding and Evaluation

The purpose of the bidding procedure is to secure effective competition up to the point of contract signature. There is much experience of how best to do this and the case studies provide examples.

Many who have been involved in this process emphasize the importance of three issues:

- The value of having simple evaluation criteria - this sector is suited to such criteria. For example:
 - either submit the lowest tariff for agreed government support
 - or submit the lowest level of government support for defined tariffs.
- The importance of specifying the project requirements closely, to ensure that the evaluation is indeed comparing like-with-like.
- Offering the opportunity for bidders to submit non-conforming bids, in addition to conforming bids. This is designed to secure innovative ideas from the private sector.

e. Ensuring Value for Money

The test of good procurement is ensuring that the private sector solution is more cost-effective than the public alternative. This requires the public sector to estimate what the public sector costs would have been. The UK DBFO program puts great effort into designing reliable 'public sector comparators', but for developing countries the information is often not available to do this. Instead benchmark costs of similar projects can be assembled - for the country in question, and internationally. This will allow bid prices to be benchmarked against best practice.

PSP in the provision of infrastructure is a relatively recent innovation in both the developed and the developing world. PSP was formerly excluded 'on the grounds that, other things being equal, the public sector could still borrow to finance projects more cheaply than the private sector, which would require a risk-related return on the funds employed. There were also misgivings about the private sector's behavior and the ability to safeguard the public interest.

Consumers of public services have discovered that political interference, shortage of funds and poor management have caused the performance of many publicly-owned and operated services to decline. It has been realized that the benefits of private sector

management, technology, preparedness to invest and innovate often outweigh the saving in financing. Furthermore, many governments admitted they could not raise the finance required.

While availability of finance has been the principal reason for governments to consider PSP in developing countries, the challenge remains for governments to satisfy themselves that private ownership, construction, operation, management, and financing is a better alternative than a public alternative. Procurement executives should be mindful that the public sector comparator, however measured, is the cost that the private sector option should not exceed.

J. Support for, and by Government

1. Support for Government

It is not uncommon for government officers to be ill-prepared when facing private sector negotiators across the table. Often the private group will have world-class lawyers, financial advisers, and technical experts. By contrast the government side will often have no prepared business case, nor have access to specialists in the fields which PSP requires.

Perhaps, surprisingly, this is not welcomed by the prospective concessionaire, because the negotiations are unlikely to be effective, and may be prolonged, or fail for no good reason other than that the government side have no informed basis from which to negotiate.

A major improvement can be made in the PSP process if government technocrats are able to access such advice to prepare projects for PSP, at bidding and during negotiations. There are some excellent examples of how this can be done:

a. Example: Philippines BOT Center

In 1995, a BOT Center was established under the Office of the President, with the United States Agency for International Development funding assistance to fast-track the BOT process. This is small (25 staff in total, with 5 consultants on average), and focuses on:

- Assisting line agencies prepare projects - assistance to the BOT Units in the line agencies, such as DPWH.
- Assisting them negotiate by providing specialist expertise, e.g., in legal and project finance aspects.
- Marketing projects internationally to potential investors.
- Developing changes to the Implementing Rules and Regulations of the BOT Law.

In the roads sector, this has been effective. It could be more effective if funding was available for agencies to prepare projects for joint public-private funding. This is currently under consideration as part of an ADB project preparatory TA.

2. Support by Government

Sometimes, once the concession agreement is signed, the government stands back. Yet active government support is essential for the following reasons:

- Government needs to fulfill its requirements under the contract - particularly in respect to acquiring land free of encumbrances and securing the necessary permissions. It also needs to provide the support defined in the contract.
- The road is an instrument of public policy, (to improve accessibility, open up areas for development etc.). The more effective the government support, the greater the project benefits are likely to be - and the more successful the project. This should be a 'win-win' situation, benefiting road users, government (through profit-sharing arrangements) and the concessionaire; but only rarely is this so.
- This is particularly necessary to integrate an expressway into the road network, and ensure that its competitive position is not undermined by other projects. Action is often necessary away from the expressway site to secure good access to the expressway, and only government can do this.
- Government must deliver on its committed reviews/increases in tariffs, on which the future project finances depend.

Table 21 establishes whether political intervention has occurred in the toll and competition arrangements after the concession agreement for toll roads has been finalized. It illustrates clearly that either government underestimates the pressures that will arise in practice, or that contracts are entered into somewhat cynically. It seems that the government has little incentive to abide by agreements once the facility is in place.

Table 21: Did the Agreed Price and Competition Policy Prevail?

Country	No	Yes
Argentina	Toll rate reduced	
Mexico		But a black market in toll receipts developed
Australia		Toll increases have been permitted
US		Toll rates were lowered where traffic was low (Dulles Greenway)
India	Riots led to the removal of tariffs	
South Africa	Local politicians agreed to improve a parallel free road	
Hungary		Despite legal challenges toll levels have not changed, but government wants local traffic to avoid the tolls
Philippines	No toll increases between 1983 and 1994	
Hong Kong, China	Cross Harbour Tunnel increases not permitted (tax imposed for congestion control). Problems with low-tariff government 'competing' tunnels	New Toll Stability Fund approach guarantees tariff increases bylaw.
Malaysia	Government has sometimes refused to allow toll increases	
Thailand	Toll increases sometimes not permitted; government obligations on competing and access infrastructure not met	

IV. BEST PRACTICES

A. Best Practices

1. Introduction

a. Need for a Process

Developing a pipeline of PSP projects in the road sector requires government to determine a process, which comprises the following activities, at two different levels.

- Sector Level:
 - Preparing the PSP environment – legal, regulatory, and contractual.
 - Identifying PSP projects in the context of a transport strategy and the realistic level of public sector support necessary, both investment and contingent investment.
- Project Level:
 - Preparing a business case for each project, to establish the basis for bidding, and confirm this is acceptable to government.
 - Securing competitive bids and negotiating leading to bid award.
 - Providing support and enforcing the concession agreement during construction.
 - Enforcing the concession agreement and regulating effectively during the concession period.

The economic crisis has reinforced on governments the need for increased transparency in the PSP process, and increased rigor in project preparation since they are now faced with a better informed, and more cautious investment community. Governments are likely to need assistance until this demanding process is established both at the roads sector level and more generally in structuring the PSP environment.

2. The PSP Environment

a. Country Conditions

Not everywhere is suited to PSP, and particularly to major BOT projects. PSP is likely to be favored in countries where there is:

- Political leadership and commitment to a PSP policy.
- Political stability.

- An existing income level which is not low - and preferably an income distribution which is equitable.⁴⁶
- A sound macro-economy, creating increasing output and real income growth.
- Low and stable inflation.
- A stable exchange rate.
- Domestic capital markets capable of providing domestic financing.
- A program of concession projects builds private sector confidence, and allows government and the private sector to spread the learning-curve costs.

The absence of any one of these features may not kill the prospects for PSP, but a country lacking the second or third will likely struggle to introduce effective PSP.

b. Project Characteristics

Some types of projects are more likely to be capable of implementation and financing. Broadly speaking the implementation and financing challenge increases with the size and complexity of the PSP option (Figure 5) and the challenge for government increases similarly.

For many countries the entry route into PSP in roads should be through maintenance and operating concessions. This allows the private sector and government to become familiar with performance-based contracting, and offers the prospect of tackling the maintenance and rehabilitation problems, common in countries.

The focus of most countries to date has however been BOT expressways. Many of these have not been financial successes. The characteristics favoring private financing of major BOT expressways are as follows:

- Projects down existing heavily-trafficked/congested corridors, or where there are missing links in the network, e.g., estuarial crossings or tunnels. This maximizes traffic prospects on opening, and minimizes land/relocation costs.
- Inter-urban, as opposed to urban projects. This keeps the implementation problems and cost relatively low, reduces the traffic risk, and is likely to be effective in tackling traffic congestion.
- Elevated or preferably at-grade alignments in cities, and at-grade construction for interurban projects. This keeps construction costs low.
- Projects in middle-income developing countries, preferably with an equitable income distribution. Here the willingness-to-pay tolls and the prospects for traffic growth exist.

⁴⁶ This is important because as country's income increases, project benefits and revenues increase proportionately, but costs much less so. The result is that project profitability increases, and the need for government support reduces. Conversely low-income countries require substantial government support, yet are unlikely to be able to provide it rationally because other projects should often have higher public investment priority. Where income distribution is equitable, car ownership and use increases.

- Tariffs close to revenue-maximizing, and with an appropriate tariff escalation formula that allows potential revenues to be captured over time, for the main vehicle classes.
- Projects with an existing income stream, e.g., from an existing estuarial crossing/tunnel, or an existing public sector expressway. This is hugely beneficial to financing.
- A project that has been well prepared - in technical terms, in securing planning consents and in proving the feasibility of land acquisition, thereby reducing implementation risks.
- A large project, which recognizes the high fixed bidding costs associated with BOT projects.

3. Preparing the PSP Environment

Political leadership is essential. Institutions may need to be restructured, with the objectives of controlling the PSP process in the public interest, avoiding tendencies for corruption or empire building, and creating a regulatory body, separate from vested sector interests.

The core requirements are:

- Developing an acceptable PSP legal framework – the exact nature of which will be country specific.
- Securing competition for the market. Government should identify good projects and then subject those to competitive bidding (rather than the widespread existing practice of accepting unsolicited bids). Where unsolicited bids are accepted, they should be subject to realistic competition.
- Securing competition in the market. This requires:
 - Legally-binding concession agreements which clearly set out the rights and obligations of all parties, and the procedures to be followed in the event of unforeseen events.
 - Establishment of an autonomous and independent regulator which is also accountable. This is likely to be in government, but quite separate from vested sector interests.
 - Encouragement of user-groups maybe empowered through an ombudsman function, to exert pressure on infrastructure providers.
- Granting concessions only after government has determined they are clearly in the public interest, and can be revoked if this is not met.

Multi-lateral support for government is likely to be beneficial in implementation. A model that has worked well combines a multi-sector PSP Center with PSP cells in the main line agencies. The main PSP Center has the brief to assist line agencies prepare, market and negotiate projects, and is staffed accordingly.

4. Identifying PSP Projects

This is a government function, which must take place in the right institutional setting if the results are to be accepted and implemented.

Priority projects must be identified in the context of a transport (or roads) strategy⁴⁷, in a two-stage process.

a. Prepare Transport (or Roads) Strategy

This is required to:

- Be acceptable, which means that all affected stakeholders should be involved in its preparation.
- Identify the package of policies and priority projects which best promote development objectives, given an assessment of existing problems and available future public funds.
- Specifically, highlight those projects/programs which may be implemented under PSP arrangements, having regard to strategy objectives and the range of PSP options available.

Table 22: The PSP Options

Strategy Objective	Maintenance	Turkey	Maintain & Operate	ROT	BOT	Corridor Management
New Source of Funds			Ö	Ö	Ö	Ö
Major capacity increase (New Road)		Ö			Ö	
Improved Maintenance	Ö		Ö	Ö		Ö
Rehabilitation of existing roads				Ö		

⁴⁷ A transport strategy is normally required for cities, and inter-urban corridors where modal competition can be effective

5. Identify Priority PSP Projects

Government must prepare feasibility studies, which will allow it to commit to specific projects. Again, the institutional setting is central to achieving acceptability, and requires the participation of the key stakeholders. This form of feasibility study requires:

- A focus on optimizing the project specification, and delivering a project with robust characteristics. Specifically, the potential of the project to promote development, social and environmental objectives as well as economic efficiency should be addressed.
- Tariff policy should be set in the light of government objectives.
- A focus on implementability and financing.
- A scope including all those activities which affect government's decision as to whether to go ahead (technical, economic, financial, institutional, legal and land).

6. Preparing the Business Case

This is required to confirm the decision to let the project, and identify the terms of the bidding in the knowledge of the likely market response; hence contact with potential bidders is necessary. This in-depth analysis should:

- Establish the project financial structure.
- Identify the nature and scale of all the project risks.
- Define the balance between government support and provisions (such as defined tariffs) to secure specific government objectives.
- Allocate risks between government and the concession company. Experience suggests the following is likely to be appropriate at a general level.

Table 23: Risk Allocation

Risk	Responsibility of the Government	Responsibility of Concession Company
Completion		
• Land Acquisition/permissions	Ö	
• Design		Ö
• Construction time/cost		Ö
Commercial – operations and maintenance cost		Ö
Commercial – Traffic Revenue	Joint, government sharing in 'super-profits', and providing downside guarantees ⁴⁸	
Financing	(government support)	Agreed with the banks Ö
Devaluation and Inflation	Ö	
Default and Force Majeure		
• By Concession Company		Ö
• By Government	Ö	

⁴⁸ This is likely to be particularly necessary for projects on green-field sites.

- Define the provisions for unforeseen events and specify the procedures for renegotiation.
- Confirm that the proposed allocation of risks and government support are likely to attract serious bids.

Government should not normally be an equity holder in the project company, as the parties have different interests. Rather, the concession agreement should foster common views, by revenue sharing and provision for project extensions.

7. Securing Competitive Bids, Negotiation, and Award

The basis for bidding follows directly from the business case. International marketing to potential investors may be necessary to maximize market interest. Success in attracting serious bidders requires the existence of an acceptable PSP process, realism in the balance of risks and rewards offered, confidence in the government resulting from its past performance, and good timing given the external macro-economic environment.

It is necessary to establish a clear bidding and negotiating process:

- The project requirements need to be specified closely, to ensure evaluation of bids can be equitable.
- Government support should be defined, where necessary as a maximum - rather than held back for negotiation. This allows the private sector to prepare realistic bids, and helps avoid failed bids.
- Government should have access to expert advice during the entire process, from preparation of bid documentation through to contract signature. The private sector will have such advice and governments need to be equally well-prepared.
- There is merit in having simple evaluation criteria - for example, bidding at defined tariffs to minimize the level of government investment required since it gives transparent decisions.
- Conforming and non-conforming bids should be allowed, to foster private sector innovation.

Government should establish whether and to what extent PSP projects achieve value-for-money, by comparing costs with the best public sector alternative. Government should also seek to establish, through before-and-after audits, how expectations are matched by reality - as a basis for continuous improvements to the PSP process.

8. Supporting Implementation and Operations

Government should be proactive during this period, with the objective of maximizing the success of the project. Government will administer the concession contract, and regulate on an agreed basis in the public interest. When unforeseen circumstances occur, government must follow the procedures set out in the concession agreement.

B. Role for ADB and Prospects

1. Role for ADB

There is widespread recognition by government technocrats and private sector players, that ADB needs to be increasingly involved in this area. Government because they require technical assistance in restructuring and reshaping of policy, as well as in funding and other support; and the private sector because they require technical assistance support to secure financing arrangements or appreciate that ADB assistance can help government to determine sector policy. This offers encouragement for ADB's continued role in supporting PSP. Table 24 summarizes the potential role for ADB in sector activities identified in this study as priority for the coming five years. There are five areas for ADB assistance as follows:

a. Preparing the Environment and Procurement Process for PSP

ADB is active here, and has been so for some years. The requirement is to extend that assistance now when it is clearly required and can reap substantial benefits.

b. Broadening Understanding of the Range of PSP Options that exists in the Roads Sector.

Most PSP options are currently not applied in Asia, and they provide an undoubted opportunity, as experience elsewhere demonstrates. In particular, they tackle the problems of maintenance and rehabilitation, which underlie the problems of the roads sector in most countries.

c. Assisting Transport Strategy Formulation.

This is necessary for identifying priority PSP projects within an integrated transport sector framework. Policy dialogue and coordination with the World Bank and JBIC is necessary. Together with ADB, the three agencies are the major providers of assistance to Asia's governments in the roads sector. At a time of considerable change, it is particularly important that a consistent message is delivered.

d. Assisting Preparation of Priority Projects.

The case study visits demonstrated that there is a role for ADB, recognized by the public and private sector alike, in assisting to prepare projects for implementation. This is beginning to happen, and the message is that more is required. This should be done with regard to the range of PSP options available, and the difficulties in delivering public-private sector (so-called hybrid) projects at times of uncertainty. It is not yet clear how the different imperatives of ADB and the private sector can best be combined, when faced with an uncertain environment. Experimentation is required to establish how this is best achieved.

Table 24: Role for ADB

<i>Assist Create Effective PSP Environment</i>
<ul style="list-style-type: none"> • Legal • Regulatory/institutional • Contractual
<i>Broaden Understanding of the PSP Options</i>
<ul style="list-style-type: none"> • Identify PSP programs and appropriate PSP options.
<i>Assist Transport Strategy Formulation</i>
<ul style="list-style-type: none"> • Develop sound integrated transport strategy. • Identify priority projects.
<i>Develop PSP Capabilities</i>
<ul style="list-style-type: none"> • Develop center(s) of PSP expertise • Establish Project Preparation Fund(s) to prepare PSP projects, and to access experts, both domestic and international for procurement.
<i>Invest in Projects</i>
<ul style="list-style-type: none"> • Catalyze financing for PSP projects.

e. Investing in Projects

Through ADB's public and private sector windows, and where appropriate by providing guarantees (partial risk and partial credit). ADB both lends for a project under a sovereign guarantee, to assist in funding the public sector activities, and can also invest in equity and provide debt on the private sector side. These activities are widely recognized to leverage substantial additional funds in projects that ADB has determined are sound investments and should be continued and enhanced.

2. Prospects

Finally, the implications of the recommendations of this technical assistance are considered. What impact might these changes produce? Of course every country is different and the following is no more than an illustration of the impact (Table 25).

Table 25: Possible Impact of the Recommendations

PSP Option	Percentage of Road Network		
	Present	+5-10 Years	+25 Years
Primary Network			
Maintenance — government	73%	0%	0%
Maintenance — management contract	25%	40%	50%
Turnkey	0%	2%	5%
Maintain and Operate (toll)	0%	5%	15%
Rehabilitate, Maintain and Operate (toll or Road Fund)	0%	35%	0%
BOT	2%	3%	5%
Corridor Management	0%	15%	25%
Total	100%	100%	100%
Secondary Network			
Maintenance —government	100%	0%	0%
Maintenance - management contract	0%	100%	100%

The main features are:

- All activity should be performance-based, by the private sector (no more government force-account, and contracts where reimbursement is based on inputs).
- A rapid development of maintenance management contracts (funded from a ring-fenced Roads Fund).
- The rapid development of ROT contracting, where there has been a prolonged failure of maintenance. This could be funded either by tolling, or from a ring-fenced Roads Fund.
- Progressive implementation of BOT projects. These will never represent a large part of the road network in most countries (maybe a maximum of 10 percent at the outside).
- Progressive development of corridor management contracts, potentially the most promising of all the options.
- Implementation of maintenance and operate contract limited by political sensitivities (it is difficult to introduce tolls before first improving the level of service).

APPENDIXES

CASE STUDIES

The purpose of this Appendix is to describe the experience of the four case study countries:

- Philippines
- Malaysia
- Thailand
- Hong Kong, China

In each case the private sector participation (PSP) process, scope and projects are described, and key issues relevant to this technical assistance (TA) are identified. The information presented was collected during the case study visits and has been supplemented with other information. Considerable efforts have been made to ensure accuracy, but in some respects this is difficult, for example project costs. The primary intention is to identify the processes, types of projects and the degree of success achieved in these very different environments.

A. Philippines

1. Introduction

The key features of the Philippines experience are:

- An early start in the private provision of roads.
- An exclusive focus on build-operate-transfer (BOT) expressways — though none are yet open.¹
- A strong focus on the legal arrangements for private sector involvement.
- The importance of the unsolicited bid.
- The dominance of Metro Manila.

The power crisis at the turn of this decade was the origin of the current BOT process in the Philippines. During the administration of President Ramos (1992-1998) Government policy has increasingly centered upon mobilizing the effective participation of the private sector in service delivery, to assist the Philippines in competing for business in globalized markets. This policy thrust is at the center of the next National Development Plan (1998-2004). The early thrust in the power sector has broadened, and now transport is a major part of the BOT program.

In the roads sector the North and South Luzon expressways (linking Manila with the north and south of Luzon Island) were constructed under World Bank loan assistance almost 30 years ago. An operating franchise was awarded under the Toll Regulatory Board (TRB) Law to a private contractor Construction and Development Corporation of the Philippines (CDCP) who were required to levy tolls, and maintain the roads — until the capital cost was amortized. Following losses in the Middle East, CDCP became a predominantly publicly-owned company, now renamed Philippine National Construction Corporation (PNCC). Recently, tolls were removed and the roads reverted to Government, but because of a failure to maintain them, a further franchise was given to PNCC to collect tolls for maintenance.

¹ Subsequently the first short section of Skyway has opened.

The original PNCC franchise has a major impact upon the roads sector to this day, for it referred to the named expressways together with links between them, extensions to them, and links to them. In practice, while open to interpretation, this includes many of Manila's proposed toll roads, and each new road effectively extends the original franchise for another 30 years. Another franchise was awarded to the Public Estates Authority (PEA) for the development of an expressway across reclamation in Manila Bay.

This history explains the twin-track legislative basis to expressway development in the Philippines:

- Joint ventures with PNCC or PEA under the TRB Law.
- Competitive bids (either solicited or unsolicited) under the BOT Law.

2. Legislative and Institutional Framework

The Manila North and South Expressways were funded and implemented by Government (under World Bank loan assistance). Subsequently, under the Marcos administration in 1977:

- Presidential Directive 1112 established TRB. The Directive authorized “the Establishment of Toll facilities on Public Improvements, Creating a Board for the Regulation Thereof and for Other Purposes”. TRB was required to approve all toll rates, following public hearings.
- Then under Presidential Directive 1113, CDCP (a major Filipino contractor) was granted a 30 year franchise to operate, construct and maintain toll facilities in the North and South Luzon expressways.

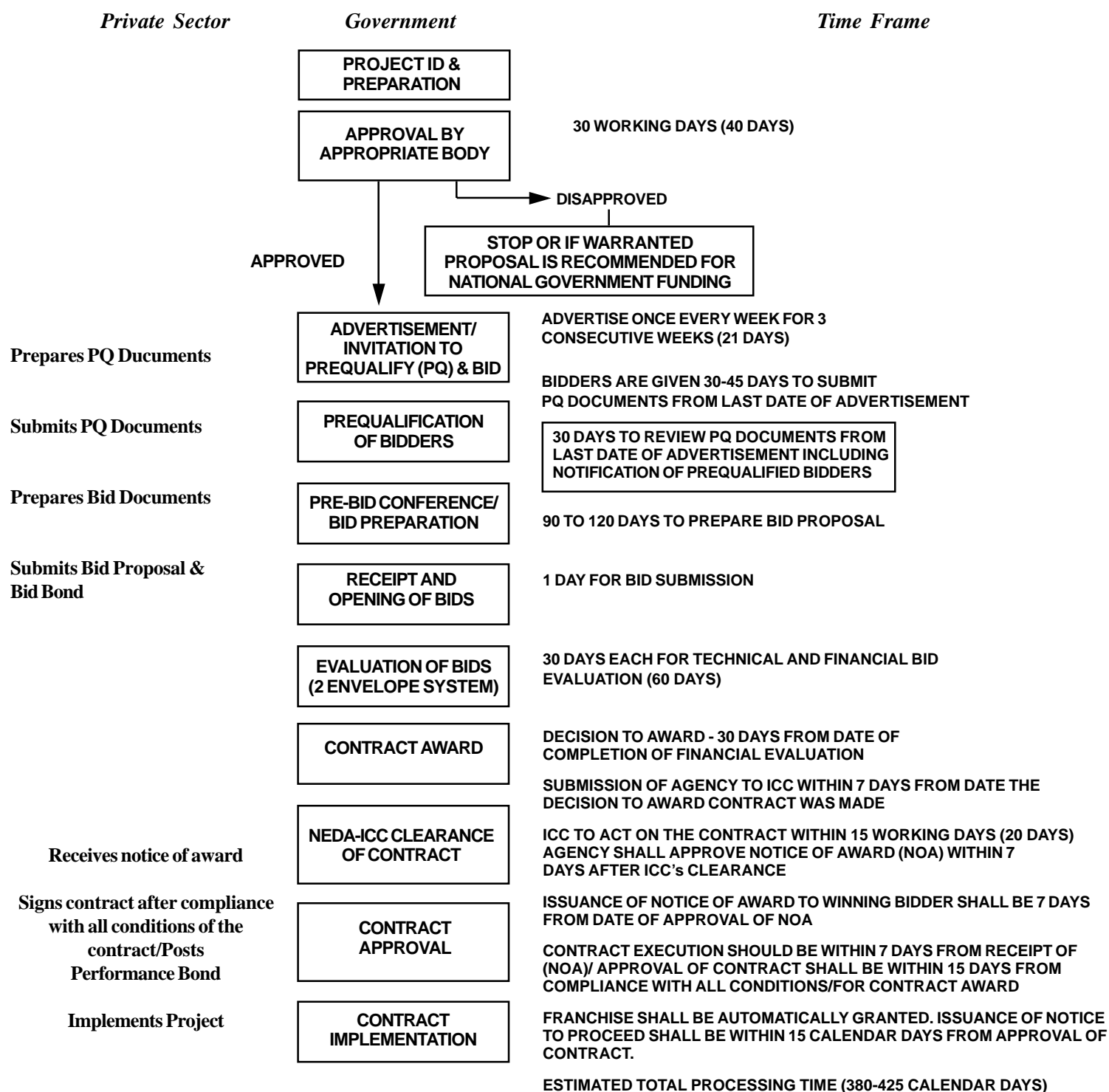
In 1983, the predominantly government-owned successor to CDCP² PNCC, was granted a 30-year franchise to construct and operate a tolled expressway linking the North and South Expressways. The franchise also gave it “the right, privilege and authority to construct, maintain and operate any and all such extensions, linkages or stretches from any of these expressways.”

A first BOT law was passed in 1990 and a second “the Amended BOT Law” (Republic Act 7718) in 1994³ Clear and comprehensive implementing rules and regulations accompanied the second law. Figure A1.1 summarizes the process.

² CDCP suffered severe financial difficulties and was rescued by several government agencies. Today the successor PNCC is 90 percent publicly-owned by these agencies.

³ An Act amending sections of Republic Act 6957 entitled ‘An Act Authorising the Financing, Construction, Operation and Maintenance of Infrastructure Projects by the Private Sector, and for Other Purposes’.

Figure A1 .1: Philippines - The Public Bidding Process Under the BOT Law



- 1 Working days are converted to calendar days by multiplying with a factor of 1.33.
- 2 The time frame in the shaded area is not prescribed in the IRR, hence is a estimate only.
- 3 Time frame excludes allotment for compliance with conditions for contract award.

Its salient features are:

- Government line agencies take responsibility for identification of priority BOT projects (but see comments re unsolicited bids below).
- All projects are to be submitted to the Investment Coordination Committee (ICC),⁴ chaired by the National Economic and Development Authority (NEDA).
- ICC must approve draft contracts for all large projects (greater than P 300 million -about US\$7.5 million).
- A transparent procedure for bidding and contract award.
- A formal process for dealing with unsolicited proposals:
 - A feasibility study is submitted to the line agency – Department of Public Works and Highways (DPWH), for review regarding its compatibility with plans.
 - It is endorsed by the appropriate line agency to the ICC, who evaluate it and to whom the promoter makes a presentation.
 - No direct government guarantee, support or equity may be required.
 - It is subject to price-matching - allowing competitors to submit proposals within 60 working days. In this event the original proponent has the right to match the competing price, in which case he proceeds with implementation.
 - TRB issues a tolling certificate before approval is given. DPWH is then responsible for implementation issues.

In 1995, a BOT center was established under the Office of the President, with the United States Agency for International Development funding assistance to fast-track the BOT process. This is small (25 staff in total, with 5 consultants on average), and focuses on:

- Assisting line agencies prepare projects - to the BOT Units in line agencies such as DPWH.
- Marketing projects internationally to potential investors.
- Assisting them to negotiate with bidders by providing specialist expertise.
- Introducing changes to the Implementing Rules and Regulations of the BOT Law.

A corresponding BOT Unit has also been established within DPWH to take the lead in the roads sector.

TRB is required to approve toll rates from competitive bids (although approval ought to be automatic in this case), to negotiate toll rates with joint ventures after holding public hearings,

⁴ The NEDA-ICC has Cabinet-level attendance, and the following representation and associated roles: NEDA chair, DPWH the line agency, Ministry of Finance MOF involved only if government guarantees are sought, DBM -allocates counterpart funding, e.g., for land acquisition.

to approve toll increases also after public hearings, and to oversee construction/implementation of joint-venture projects. The President holds final decision-making power however and can reverse TRB decisions to increase rates. TRB has more than 100 staff. However between 1983 and 1996 there were no toll increases at all.

All projects are required to have an Environmental Impact Assessment, which is to be approved by the Department of Environment and Natural Resources. This process does sometimes influence the project definition. Relocation and resettlement issues are a particularly big problem for major projects in the Philippines, and this is particularly true in Metro Manila.

3. Project Identification

All the identified expressways are in the Greater Capital Area — an area within 100kms of Metro Manila, either in the city, or on the radial intercity roads emanating from it.

Hence, there is a development plan but it does not yet have a major influence on land use. There is a transport strategy for the city but it does not yet have a mechanism for addressing the issues of priority for particular projects and project identification. This creates two common problems in practice:

- Project identification often takes place in a network vacuum — this means that there is a lack of provision for integration between roads and many strategically important linkages are missing from the network.⁵
- Good projects are pre-empted by the development of others, which may have less economic merit. For example, many of the projects in Metro Manila are for new expressways along radials into the center of Manila. Typically this prevents the construction of good public transport connections in those corridors when in fact, the public transport option might be more appropriate. Once developed, these projects have a high opportunity cost since they frustrate future strategy.

4. Results of the Process: Projects

- Table AI .1 summarizes the characteristics and status of BOT expressway projects in the Philippines.
- There are no BOT expressways operational at present.⁶
- Five are under construction: Skyway [CITRA]; Manila-Cavite [Renong]; North Luzon Expressway [BENPRES]; South Luzon Expressway (SLE) [Hopewell]; Southern Tagalog Arterial Road (STAR) [CITRA].
- Of these one has been competitively bid. This was successful:
 - Evaluation was on the basis of the criterion: lowest toll rate. This simplicity assisted the evaluation.

⁵ The same is true for Mass Rapid Transit (MRT) project, which sometimes conflict with proposed expressways.

⁶ This was the case at the time of the visit in April 1998, other than a short section (8 km) of the Subic Expressway. Since then a short section of Skyway has opened. In October 1996 the toll per car-km was increased from P0.18 to P0.30.

- The winning rate was P0.7/car-km, compared with the government estimate of 1.25 c/car-km.⁷

Table A1 .1: Philippines: BOT Project Characteristics

Project	Status	Cost US\$bn ⁸	Project	Contract
Metro Manila Skyway Stage 1	Construction	0.4	Existing 15km expressway to be tolled (P22/\$0.55 for cars), with 9km expressway constructed above and tolled (P55/\$1.38 for cars)	JV PNCC with CITRA Indonesia & CMMTC. .. Taking over existing tolled road gives substantial guarantees & support Originated in 1992 United States Agency for International Development feasibility study
Metro Manila Skyway Stages 2,3	Planning	0.9	21km	As stage 1
Manila Cavite Expressway	Construction	0.3	10kms at-grade xpm along coastal road 6km link to C5	JV Public Estates Authority with Renong (Malaysia) Potential support from development
Philippines National Railway (PNR) Pabahay Sa Riles Tollway	not clear	0.4	16km elevated expressway over PNR right-of-way, with low income housing attached	JV PNR with New San Jose Builders
R10/ C3 Expressway	Planning	0.1	7km elevated expressway, providing Port access from North Luzon Expressway	BOT. DPWH solicited bid by Kvaerner
Pasig Expressway	NEDA Approval sought	0.8	19km mostly elevated	BOT. Unsolicited bid by Kumagai Gumi/ Strategic Development Corp./ Marubeni/ CITRA
Circumferential Road 6 (C6) - North	Planning	1.2	48km between North and South Expressways	JV between PNCC and CITRA .. Possibility of landowner contributions
C6 — Central	Planning		23km — paralleling Skyway	JV between PNCC and CITRA
C6 — South	Planning		18km linking Manila Cavite Expressway with South Luzon Expressway	JV between PNCC and Renong

⁷ The main reason for the apparent 'saving' was that the government revenue estimates were based on 1990 forecasts - before the economy took off.

⁸ Calculated as Philippine pesos divided by 38.

Table A1 .1: Philippines: BOT Project Characteristics (continued)

Project	Status	Cost US\$bn	Project	Contract
STAR to Batangas City	Stage 1 - planning	0.1	Stage 1 - 9km still planning (part of Hopewell South Luzon Expressway)	BTO competitively bid. STRADEC (Indonesia)
	Stage 2 - Construction		Stage 2 - 22km JBIC project under construction	Project had existing feasibility study as untolled expressway
	Stage 3 - planning		Stage 3 - 24km still planning	
SLE Upgrade and Extension to Pagbilao	Construction	0.3	28km rehabilitation and widening to dual 3	JV between PNCC and Hopewell (who are developing a power station and port at Pagbilao)
			77km construction dual 2/3 (incl. 8km spur to STAR)	Secures revenues from existing Alabang-Calamba expressway
Calamba to Tagaytay Expressway	Planning	0.1	20km link to development centre	DPWH BOT project
North Luzon Extension expressways to Clark and Subic	Total 157 kms:	0.5	80km Rehabilitation/widening of existing expressway	JV PNCC with FPIDC (Benpres)
	Subic expressway: 10km open, 47km design		57km San Fernando-Subic	Support from taking over existing toll road
	Clark Expressway: design		20km C-5 northern link to University of the Philippines	
	C5 link - design			
North Luzon Pangasinan Extension to San Fernando La Union	Planning	0.45	255 kms	Itochu JV with PNCC
North Luzon Expressway East - Extension to Cagayan Valley	Under preparation	0.6	20km expressway EDSA-Fairview	BOT
			250km extension to Cagayan Valley	

5. Conclusions and Comments

The Philippines has made huge strides in attracting private sector funding. After early success in the power sector, implementation of expressways is taking place, with a pipeline of identified projects. Strong political purpose has resulted in a BOT Law that has secured substantial confidence in the investment community. This has been achieved in a relatively short time — less than a decade.

Figure A1.2: Philippines Expressways - Luzon

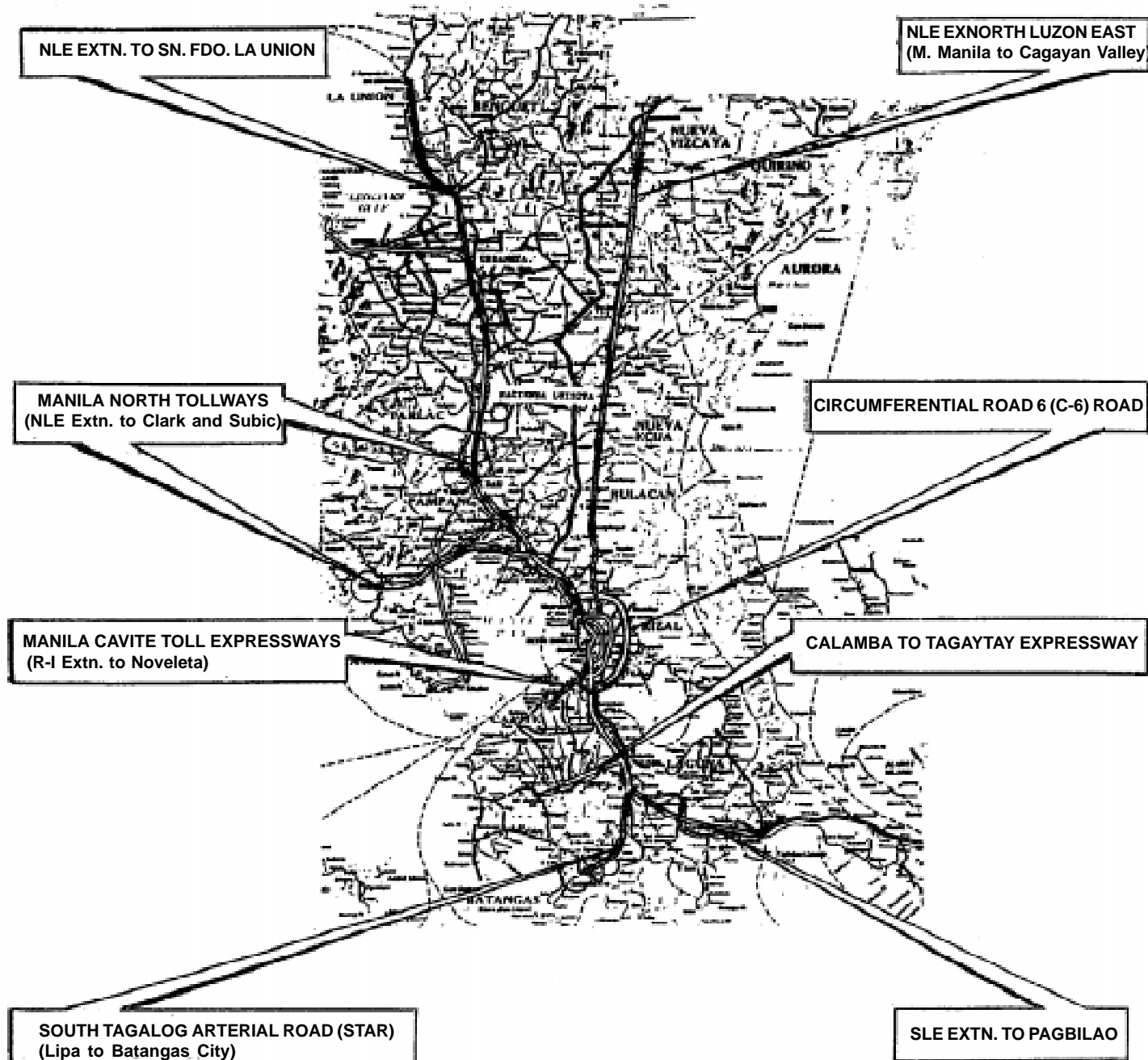
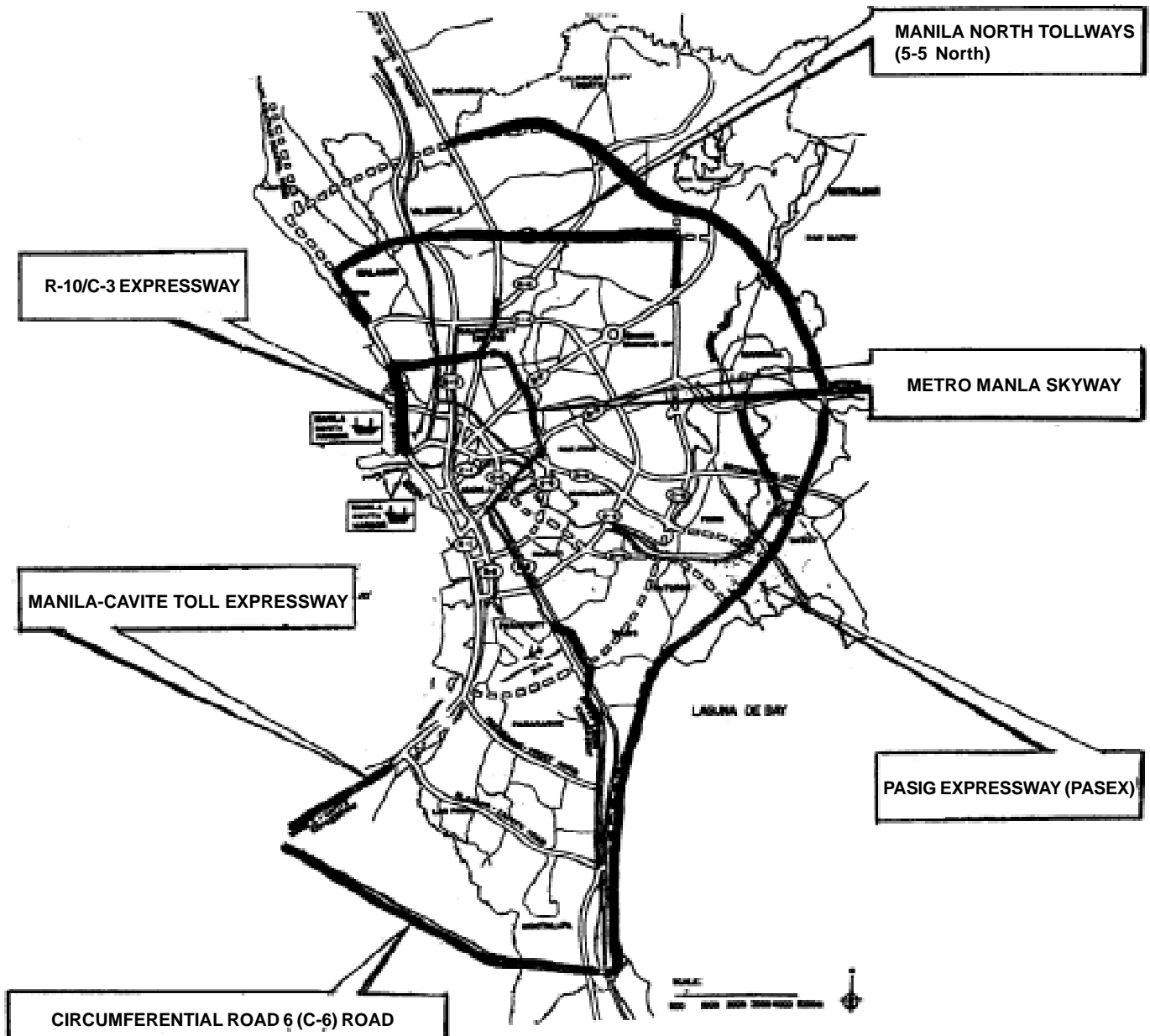


Figure A1.3: Philippines Expressways - Metro Manila



The characteristics of the expressway projects proceeding are:

- A wide range of project types: urban and inter-urban, but focused on Metro Manila.
- Mostly manual tolling - but with electronic tags for Skyway and STAR.
- Substantial innovation.
- A wide range of project developers, both foreign and Filipino.¹⁰
- All projects require substantial government support of one form or another: provision of land, development gain (PEA), taking over/tolling an expressway either existing or under construction and funded by government etc. The Pasig expressway is the closest to being 'profitable'.¹¹ This is under review at NEDA, and the concessionaire has requested that land be provided at no cost.
- For joint ventures the private sector has to date led on design and construction activities, and PNCC tolling and maintenance.

The key issues in the Philippines are:

- The absence of a soundly-based transport strategy, which is used as the basis for making decisions. This has meant that priority projects are not always identified and there has been inter-project and inter-agency conflict.
- The need for privately-funded expressways is primarily driven by a small public investment budget ('there is no alternative'). There has been no discussion of the use of tolling strategy as a matter of transport policy to improve efficiency of resource allocation, to promote social equity etc.
- The absence of investment in project preparation. Project preparation is important since it maximizes the participation of the private sector and allows project implementation to proceed with predictable consequences.¹² However, in the Philippines, Government has often tended to be reactive, and little is yet done to prepare projects for private/public implementation.
- The failure to recognize the valid use of public support to secure the non-user benefits of expressways. The assumption is that expressways are profitable. Typically, however, expressways are only profitable if they have access to an external revenue stream or government support in one form or another.
- Local government opposition to national government plans. This has been particularly problematic for land acquisition.
- An absence of competition in contract award. In the case of the PNCC and PEA joint venture projects, there is no competitive bidding. In the case of unsolicited bids under

¹⁰ Including PNCC and PEA (Filipino joint venture partners), CITRA (Indonesia) and STRADEC (Indonesia) and Renong (Malaysia), Hopewell (Hong Kong, China), Kumagai Gumi (Japan), Marubeni (Japan), and FBIDC (Benpres) and New San Jose Builders (Filipino).

¹¹ Meaning that its revenues will fund all its development, land, construction, and operating/maintenance costs, together with profits acceptable to shareholders.

¹² Resulting in implementation to a predictable timescale, and ensuring that the project benefits are maximized.

the amended BOT Law, although price-matching is provided for, it is likely that its intent is being circumvented by project promoters.

Table A1 .2: Pros and Cons of the Alternative Tracks for Investing

TRB Law (Joint ventures with PNCC, PEA)	BOT Law
JV's formed under franchises awarded. In the case of PNCC these are constantly renewed as the network is extended	
<ul style="list-style-type: none"> Government provides the right-of-way Board of Investments (BOI) incentives provided as per BOI Act 	<ul style="list-style-type: none"> No right-of-way provided BOI incentives provided as per BOI Act
Contract terms negotiated on a case-by-case basis	No direct government guarantees, support, equity
No competition	Competition: <ul style="list-style-type: none"> bidding if solicited price-test if unsolicited
No NEDA, Department of Finance involvement, and no NEDA-ICC role (unless government support is requested). Can be a time-consuming process	Requires NEDA-ICC approval (all expressways in practice are 'large' projects). Then, concession award is automatic The Implementing Rules and Regulations are currently being reviewed to improve the process

- Tariffs are not defined as a matter of policy; instead they are the outcome of the bidding process, and vary from project to project. The negotiated tariff escalation formulae similarly vary.
- The regulatory agency TRB, is in substantial conflict with DPWH and also project concessionaires. This is in spite of the fact that the BOT Law transferred TRB to DPWH. This is partly a matter of jurisdiction (the focus of technical regulation activities) and partly of personalities and history. It is a serious problem, frustrating the process.
- Government cannot provide guarantees under the unsolicited bidding route, meaning that it cannot make payments direct to banks. But if the payment is via the private sector interest it seems this circumvents the intent of the rule.

Many of these issues are recognized in Government, and steps are in place to remedy them, thus further improving the process:

- The just-completed major thrust of TA 2487-PHI: Philippine Transport Strategy Study was to secure private sector participation in the public interest.
- The current Bank TA 2968-PHI: Transport Infrastructure and Capacity Development Project is assisting Government in this area, and identifying a possible loan to provide ongoing support.
- Improvements to the BOT process are being considered by NEDA-ICC, with inputs from BOT Center. There is, however, a resistance to reducing the autonomy of individual agencies, and no great expectation that there will be a rapid reversion to competitive bidding under the BOT Law.

Inevitably government had to provide strong incentives to attract investors in the early days. This has now been done. Once achieved there is concern that the balance of risks and rewards, if left unchanged, may act against the public interest. Today there is a perceived need for the pendulum to swing back, focusing on the public interest. Pragmatism combined with continuous monitoring and recognition of this public interest provide a promising basis for the future development of policy.

B. Malaysia

1. Introduction

The key features of the Malaysian experience are:

- The resounding success of the first project — the North-South Expressway (NSE).
- A large number of projects both completed and in the pipeline.
- Limited Government involvement in project identification.
- The absence of transparent legal frameworks for private sector involvement.
- The heavy involvement of domestic Banks.
- The complication of multiple tolling technologies.
- Financial difficulties for concessionaires, and hence Government, as the economy has faltered in the late 1990s.

Key to the Malaysian expressway experience is the first project in the sector: the NSE. This project has influenced everything else. The road had originally been designed as a public sector project and Government built the first third (335kms). In the mid-80s, the project was restructured as a BOT expressway. The existing road was transferred to PLUS,¹³ who were also given tolling rights over the whole road. Hence, during construction of the remainder of the road, between 1988 and 1994, PLUS had a revenue stream from the first section. The whole project has had a huge, positive impact upon the economic and social geography of Malaysia, and has attracted rapidly growing traffic. It has had a profound impact on future BOT projects.

Is the NSE profitable? Undoubtedly, it is for the project company. However, had it been a stand-alone project without the Government assets and their revenue stream, it would not be.

Malaysian expressway development has happened over a relatively short time (the last ten years). The results of the program are only now becoming clear. This concentrated period of project development has allowed no time in which to learn the lessons of experience. Financial problems for some of the projects are now contributing to the shock waves in the economy. Many of the projects relied on the property market for additional revenues and as that market weakens the knock on effects for expressways have become clear. Almost all of the projects now require some Government support.

How has this situation developed?

- Contractor-led consortia have usually made large construction profits. (These are often secured by appointing fixed-price sub-contracts to smaller companies.) This has been the motivation of virtually all the players, Government and private sector. Hence, the consortia have had little incentive to consider long run financial viability.
- There has been no framework of transport policy, or national transport strategy. The result has been that:
 - There is no basis to reject any proposal.
 - Projects have been developed in isolation from their network consequences.

¹³ Part of the Renong Group.

- Concessionaires have had little interest in the economic, environmental or social impacts of their project.
- The Economic Planning Unit (EPU), which is part of the Prime Minister's office, controls the process, rather than the Highway Planning Unit whose brief is restricted to government projects. Hence the government has not always:
 - Ensured that each project is justified and a priority.
 - Ensured that the benefits of competition are realized. The typical route for developers is via the Prime Minister and a letter of intent and exclusivity from the EPU. This has ruled out competition before the feasibility study stage.
 - Enforced the concession agreement in the public interest.
- Where there has been competition for a well-prepared project it has been successful — attracting private sector interest, innovation and in all probability providing good value-for-money. The key example of this was the Shah Alam Expressway project, which was tendered in 1991. Its concept had been developed by JBIC and subject to considerable preparation. The bidding period was extended three times from the initial three months, allowing bidders to develop innovative concepts. Gamuda were the winning bidder. Their bids saved RM150mn by avoiding filling in a mining pond -which meant that there was no need for a Government soft loan, changed the staging and took innovative funding advice from Schroders. However this was unusual. For both the Kuala Lumpur (KL) North-East Expressway and the East Coast Expressway there were three groups bidding, and the government asked them to combine, removing effective competition. In the case of the East Coast Expressway there has been no progress because of differences between the three.
- There is no BOT Law providing the legislative basis for the system and little transparency in the system of project identification and procurement.
- All debt tends to be domestic, and the banks, in practice, take no risk. The government guarantees the loans through the concession agreements. Thus it is the government that takes the majority of the risk. The current financial crisis has highlighted the problems of this contingent liability for the government.
- The project sponsors are often big infrastructure groups who may also have interests in the banks. This substantially increases risk and reduces transparency.
- The typical debt: equity ratios are 4:1. This suggests that the banks should be carrying major risk, but in practice because of government support through the concession agreement, they are not. Therefore, they carry out little due-diligence work before deciding to invest.

- One interesting aspect of this experience is (in marked contrast to most countries) the ability of the private sector to implement projects which they identify. The private sector:
 - Plans the projects.
 - Identifies most projects
 - Designs
 - Implements.
 - Operates.

2 Legislative and Institutional Framework

There is no BOT law. Rather, the system has usually operated in the following way:

- A project is developed to a pre-feasibility level by a private group, who request a letter of exclusivity from EPU to develop the project EPU reviews the project concept and if the project is approved, a letter of exclusivity is issued
- The project is subject to full feasibility study, and a Privatization Proposal developed. This is submitted to EPU for formal review EPU usually convenes a Technical and a Financial Evaluation Committee, involving the appropriate line agencies.
- Concessionaires may proceed to detailed design in expectation of approval, in parallel with negotiation of the concession agreement. This may take 3-9 months.

It typically costs RM 3 million-RM 4 million (US\$1 million) to complete this process.

Department of the Environment approval is required for an Environmental Impact Assessment and in some cases this has influenced projects. Relocation and particularly squatters are often a particular problem and here the private sector has sometimes assisted the Government. For example, PLUS seconded staff to assist with land acquisition for the NSE.

A key issue facing the private sector promotion of projects which are not subject to government preparation, is that there is no basis on which to compare the projects, as each bid has different characteristics. Other issues arise from the competing technologies among the different developers. For example, Renong uses the infra-red tolling technology, and Gamuda the micro-wave system.

Many different government agencies are involved in the process. The Malaysian Highways Authority signs the concession agreement, and is responsible for technical regulation; while economic regulation is the remit of EPU and the Cabinet — who need to approve toll increases (even when their basis may be defined unambiguously in the concession agreement).

EPU has defined some clear policies for the sector:

- There should always be a parallel free road.
- Public transport should be encouraged to use expressways. Thus tariffs on buses are lower than for cars. This is an innovative approach to promoting social equity.
- Motorcycles have separate tracks, engineered into the design, along the Federal Road 1. This reflects the large number of motorcycles, which are used by low/middle income people and also contribute to social equity.

Tariffs are derived from the concessionaires bid and negotiations, based on EPU's view of an acceptable rate of return (currently 15 percent IRA). They are therefore based upon the need to repay the cost, rather than on transport policy objectives. Tolls are all per - kilometer based. NSE tariffs have, in practice, set the benchmark and they were guaranteed an increase of 6 percent per annum resulting in a real increase when inflation was low. Toll rates for taxis and buses do not rise. Current car tariffs are 10.5 sen/km (US2.8 cents/km). Recently government refused the application for an 'automatic' 6 percent increase. This came at a difficult time economically - with widespread resistance to toll increases, and discussions are ongoing about compensation.

The Shah Alam Expressway has the following tolls:

- RM 1/car at each of the tollbooths on the 17km open section.
- RM 1/car to be charged at the single tollbooth on the 18km extension.
- Tolls increase to RM1.20 in January 1999 and RM1.60 in 2001 – resulting in a guaranteed increase of 6 percent every 2 years.
- Medium goods vehicles and heavy goods vehicles are charged RM1 .5 and RM2 respectively at each tollbooth (and RM2 and RM3 on the KL-Karak section).
- Buses are charged 75 sen and taxis 50 sen at each toll barrier.

In the latest concession agreements the government is moving towards a system of:

- Restricting increases to every 5 years.
- Only allowing an increase when revenues are no higher than forecast at the time of the concession agreement. This is part of government's effort to tilt the balance of reward back towards the government.

3. Project Identification

A national roads master plan was developed in the early 1980's and Kuala Lumpur transport study undertaken in the mid 1980's, and updated under JBIC funding in 1998. However, these plans do not provide a strategy for project identification and prioritization. (The current KL master plan does not include a recommended roads strategy).

Moreover, the responsible KL agency (DBKL) while invited to comment on project proposals, has little influence and sometimes opposes projects which are subsequently given approval from the national Government.

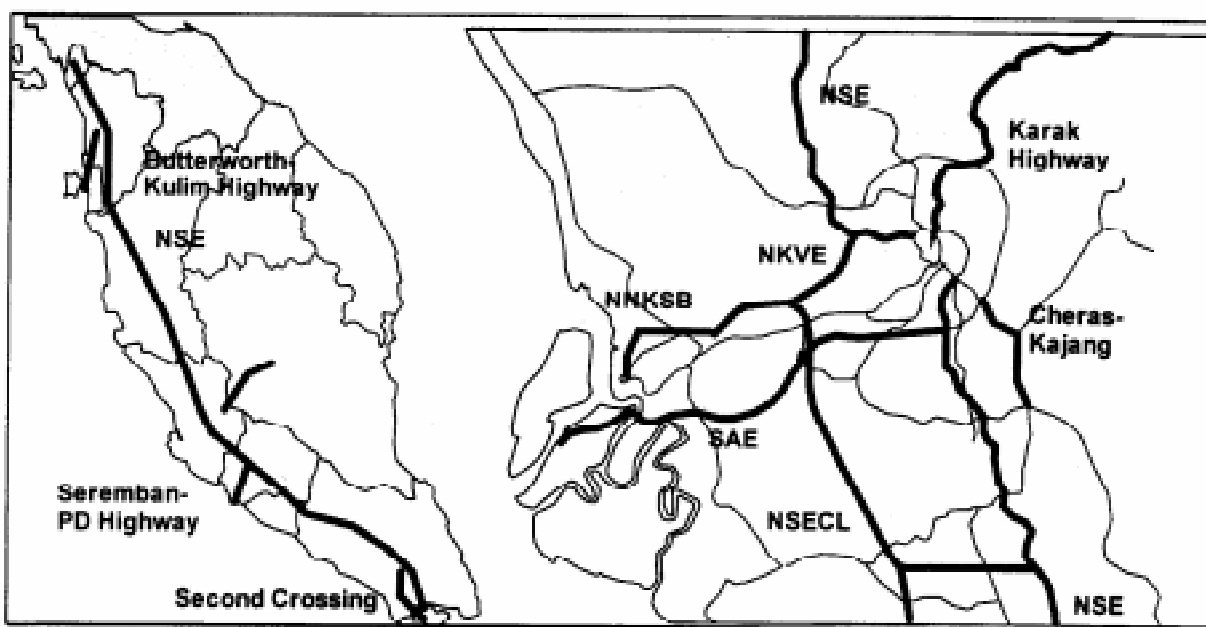
In summary, government has looked to the private sector to identify projects and the private sector has responded with enthusiasm.

4. Results of the Process: Projects

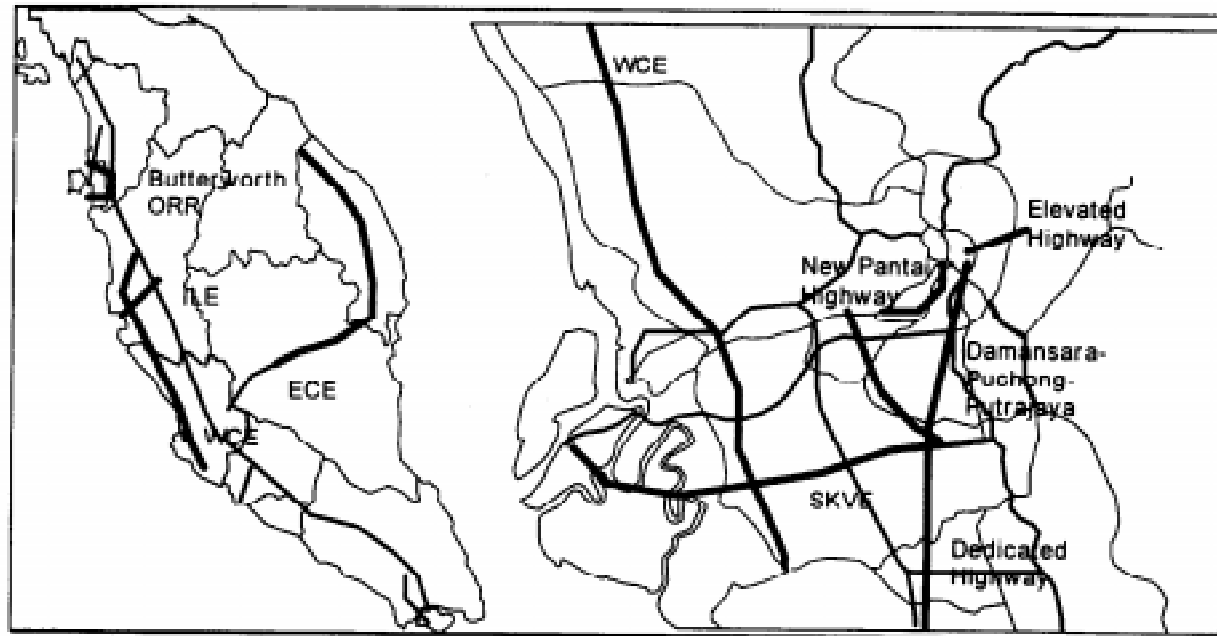
Table AI .3 and Figure AI .4 summarize the extent, characteristics and status of BOT expressway projects in Malaysia:

- There are 9 BOT expressways operational at present.
- Another 15 are under construction.

Figure A1.4: Malaysia Expressway



Privatised Toll Roads (Sixth Plan period)



Privatised Toll Roads (Seventh Plan period)

Table A1 .3: Malaysia: BOT Expressways

Project	Status	Cost US\$bn ¹⁴	Project	Contract
Operational				
North-South Expressway	Staged 1988- 1994	1.6		Inherited 335kms of existing expressways. PLUS assured income from day 1
New Klang Valley Expressway Butterworth-Kulim Highway	1994 1996			PLUS - tied to NSE concession MMC to develop area, but no development yet
Penang Bridge			14 km	Intira Bhd Successful 8-10%pa traffic growth Extra capacity required when level-of-service C'
KL-Karak Road Upgrading	1994	0.1	60 km	MID. Taking over existing road with toll collection
North-South Expressway Central Link	1996	0.3	48 km	UEM (ELITE)
Shah Alam Expressway	1995-8	0.5	35km	KESAS Sdn. Bhd. Separate mc facilities provided
Seremban-Port Dickson Road	1998	0.1	23km	SPDH
Second Malaysia-Singapore Crossing	Jan 1998	0.3	5km	UEM (LINKEDUA) Traffic 6,000vpd - 25% of forecast No New Town development yet
Construction				
New North Klang Straits Bypass	1998		15 km	Shapadu
Cheras-Kajang Road Upgrading	1999	0.1	12km	GRAND SAGA Sdn. Bhd.
Damansara-Kuchong Highway	1999	0.3	40 km	GAMUDA (LITRAK Sdn. Bhd.) — first to be listed as IPC
Ampang Elevated Highway	2000	0.1	7 km	Projek Lintasan Kota Sdn. Bhd.
New Pantal Highway	2000	0.2	20 km	MAXTRO Engineering Sdn. Bhd.
Kajang Traffic Dispersal Ring Road	2000	0.3	37 km round Kajang	SILKISungei Way (construction conglomerate)
Kajang- Seremban Road	2000	0.3	49 km	KASEH Lebuhraya Sdn. Bhd.
Western Kuala Lumpur Traffic Dispersal Scheme	2001	0.3	26 km	SPRINT
Assam Jawa-Taman Rimba Templer	2001	0.2	31 km	LATAR
Butterworth Outer Ring Highway	2002	0.1	19 km	Lingkar Luar Butterworth Sdn. Bhd.

¹⁴ Calculated as Malaysian ringgit divided by 3.8.

Table A1.3: Malaysia: BOT Expressways (continued)

Project	Status	Cost US\$bn ¹⁴	Project	Contract
Sungai Besi Highway	1999	0.1	16 km	Besraya (M) Sdn. Bhd.
Ipoh-Lumut Highway	2002	0.2	70 km	SILEX Sdn. Bhd.
East Coast Expressway	2006	1.1	338 km	PELITA Sdn. Bhd. Bid competitively, 3 bidders req'd to combine
Dedicated Highway KL – Kuala Lumpur International Airport	2001	0.6	42 km	Majis Group leading KLT consortium
Planning				
Pandan Corridor Road	2002	0.3?	15 km	Guthrie plantation owner owns land Syuhada-Makmur Renewed negotiations on land and tariffs
Jelutong Expressway, Penang			9 km	
Guthrie Road	2001			
Gemas-Pasir Gudang Expressway		0.7	250km 33 Year BOT	
Penang Second Crossing	2003	0.5	6 km	Intria Bhd/Costain
KL Elevated Federal Expressway		0.6	22 km	UEM
South Klang Valley Expressway	2003	0.4	45 km	PERSPEC/ DRB. Looks poor.
West Coast Expressway	2005		260 km	Talam/Larut property developers. Suspended indefinitely
Pre-Planning				
KL North-Western Dispersal Scheme	2001		15 km upgrade + new const'n	Sungei Way
River Klang Elevated Expressway	2002	0.6	22 km	
Second East-West Road				
Malaysia-Thailand Land-Bridge		2.7		
Penang Outer Ring Road	2002	0.5	21 km	
Muar-Tangkat-Segamat Road		0.6	43 km	
KL Eastern Expressway (KLEE)	2002			GAMUDA
KL North-East Expressway	2001			HUME!MRCB

5. Conclusions and Comments

Malaysia had good reason to be proud of their early achievements, led by private sector entrepreneurship. But recently the system has shown signs of strain. Key points to note:

- Malaysia has achieved much in terms of completed projects, with more under construction and in the pipeline.

- Malaysia's private sector has shown - maybe uniquely, that it can 'make projects happen'. This is a substantial achievement. It is because of: (i) very strong commitment from the top that this will happen; and (ii) large incentives to the private sector to carry out functions normally carried out by government.
- The Government has often not benefited from competition, nor has the investment been without substantial government support. The private sector has usually obtained high profits and avoided carrying significant risk. It is the public sector that has carried most of the risk, and has a huge contingent liability - which is now being realized.
- There has been much innovation in projects and approaches, and a broad, adaptable industry has been developed. Unfortunately the benefits of this experience are unlikely to be exportable on a significant scale.
- There has been little economic or social evaluation of the program since privatized projects are assumed to be in the public good and there has been little or no public participation.
- Malaysia's privatization has been implemented under strong determination to benefit Bumiputras, by creating large entrepreneurial conglomerates. The major beneficiaries have been the project developers and the banks. The former have shown their ability to develop innovative project concepts, quickly and to make construction profits with financial innovation.
- There has been little risk taking from banks, who have been protected by Government guarantee. Also, banks may be linked to the project developers, or acting under government influence. The lack of risk has meant that the banks have often failed to carry out appropriate due diligence.
- Government has given support to assist project viability: land, soft loans — repayable after commercial debt is repaid creating long-term finance, and traffic guarantees (on the NSE).
- Government does not provide foreign exchange guarantees, which have not been an issue because virtually all debt has been domestic. Until recently, foreign equity investment has not been allowed. Under liquidity problems this is happening, requiring approval on a case-by-case basis.
- There is no transparent BOT or concessioning process, no BOT Law and no published procedures.
- Profits for the project developers come from construction and sometimes latterly from listing the project on the KL Stock Exchange. This can be done for a large project (greater than RM500 million) before construction, based on projections. GAMUDA have done this - the concept is that a first listing can be the vehicle for raising subsequent equity by rights issues or sale.
- However, toll roads rarely make money without strong government support (in kind, investments and/or guarantees). This is a clear conclusion from this case study. It is estimated that only 2-3 out of the first 9 operational projects are profitable without such Government support.

A conclusion may be that — as for Mexico — Malaysia has suffered from developing its network too quickly. It is only recently, when the main batch of projects started opening, that Government realized the scale of their contingent liability.

This realization together with the impact of the economic crisis is now leading to change. MOF is now taking a more central role because of the need to fund the government liabilities. Bank Negara has not classified toll roads as priority projects but existing projects are being supported through restructuring of developers' debts. One key lesson has been that land and development profits have provided an unsafe basis for project funding.

Both Government and the private sector see the need for assistance by ADB and other multi-lateral lending institutions, and programs are being developed to provide that assistance. A new chapter in Malaysian road privatization may be beginning.

C. Thailand

1. Introduction

The key features of the Thai experience are:

- The dominance of Bangkok.
- Institutional conflicts and lack of government planning.
- Process difficulties, and a changing process.
- The difficulty of terminating concession agreements that are not implemented.
- Financial difficulties for concessionaires, and thereby for Government, as the economy has faltered in the late 1990's.

All of Thailand's existing expressways are in the Bangkok area, or on radial routes connecting to Bangkok. The conditions for successful expressways exist - high traffic flows, severe traffic congestion, a poorly developed existing road network and relatively high and increasing values of time.

Today a network of expressways has been developed. The process of development has been difficult, with at least one project failing (Hopewell) and two others experiencing major contractual problems — Second Stage Expressway and Don Muang Tollway.

The network has developed in phases, with the participation of several different government agencies. In the late 1970's, government developed the First-Stage Expressway System. In the late 1980's government policy was 'private sector first' - and individual government agencies were encouraged to contract BOT expressway and mass transit projects. The Second Stage Expressway, Don Muang Tollway, and Hopewell were the first results; with other projects planned as BOT concessions. These were not co-ordinated and almost all major corridors had megaprojects which conflicted with one another, often using the same airspace. The problems created at that time, still cause severe problems today.

During the early 1990's, three significant events took place:

- In 1993, the Anand Government introduced a law requiring compensation be paid for land, at market rates. This resulted in a huge increase in the Government cost of megaprojects, with two results:
 - Conflict on the Second Stage Expressway leading to a collapse of the original shareholding in BECL umagai Gumi and foreign lenders were replaced by Expressway and Rapid Transit Authority of Thailand (ETA) and Thai lenders]. This undermined the confidence of the international community that the Government could administer a legally-binding concession agreement.
 - Increasing institutional conflict between the two main agencies in the sector: ETA and the Department of Highways (DOH). Increasing land prices forced ETA to adopt existing road alignments, to minimize land take. DOH own the rights-of-way of several roads and consider they should develop them. This remains a serious problem with the agencies having sometimes developed 'competing' projects, creating difficulties and uncertainties.
- A 1993 Royal Act created the current framework for private sector participation. This sought to ensure that government agencies did not, in future, unilaterally contract BOT concession agreements; it applied to all large (>1 billion baht) projects.

- About the same time the Cabinet decided that within a 25 square kilometer area of central Bangkok, all transit lines should be underground. After appeal, 2 of the 3 transit schemes with concession agreements were allowed to remain elevated. Although expressways were not involved, the process caused uncertainty and difficulty given the network of actual and proposed expressways and MRT lines.

The Thai economic crisis began in mid 1997. The chaotic process by which BOT projects have developed may have been a contributory cause of that crisis. ADB¹⁵ is assisting the Thai Government to improve the current process.

2. Legislative and Institutional Framework

There is no BOT Law and the existing BOT process is not yet regarded as fully transparent.

The main Government agencies and their responsibilities are:¹⁶

- The Ministry of Finance: provides government support (investment, guarantees) for projects.
- National Economic and Social Development Board (NESDB): is under the Office of the Prime Minister and responsible for strategic infrastructure planning, but with no veto over projects.
- DOH is under the Ministry of Transport and Communications and is responsible for national highways.
- ETA: is a state enterprise under the Ministry of Interior, responsible for new expressways.
- Bangkok Metropolitan Administration: is responsible for metropolitan roads in Bangkok.
- Ministry of Science, Technology and the Environment: requires environmental impact assessments for major projects.

There is a history of institutional conflict, with decisions often being resolved at Cabinet level. ETA and DOH have separately and independently prepared expressway programs without co-ordination. It is around the periphery of Bangkok that the major conflicts arise with the first agency to construct tending to force a delay or change the plans of the other agency. ETA has not been involved outside the Bangkok region.

¹⁵ TA 2353-THA: *Private Sector Participation in Infrastructure Projects*.

¹⁶ In addition, the Public Works Department construct some roads: bridges and approach roads in Bangkok, secondary roads outside; but it cannot collect tolls.

DOH has the authority to develop tolled expressways, under the recently amended Highway Concession Act. They have produced a national expressway network,¹⁷ which has the following features:

- It is national in scope - see Figure AI .5 and includes the Bangkok Region.
- It is ambitious and is to be implemented over 20 years.
- It comprises 4,150kms of expressways.
- Its cost is estimated in 1997 prices as US\$13.4 billion.
- It is to be implemented in its entirety as BOT concessions, with toll revenues used to fund the network. It is expected that this will be feasible without a massive government commitment.
- The first 5-year program was approved by Cabinet in April 1997, and comprised:
 - 11 motorway projects, 852 kms in length, costing Bt159 billion (US\$4.2 billion@Bt38=\$1).
 - seven of which have been subject to feasibility study.
 - two of which were considered to be ready for private sector participation.

No procurement strategy was announced for the new program. In the past, the Government has provided guarantees on an *ad hoc* basis, depending on the project and the sponsors. This has made it difficult for bidders, who may have had unrealistic expectations. In some cases evaluation has taken place and the decision submitted to Cabinet for approval only to find that the Cabinet have required the whole process to start again. Substantial delay and frustration has sometimes been the result.

Projects developed under the Highway Concession Act will have:

- A concession period of between 25 and 30 years, based on the expected financial rate of return.
- A 'closed' toll system with specified toll rates:
 - Cars/4 wheels, 1 Bt/km, but 30 Bt minimum
 - Vehicles up to 6 wheels, 1 .6Bt/km, but 50Bt minimum.
 - Vehicles > 6 wheels, 2.3Bt/km, but 70Bt minimum.
- There is no clear policy on toll rate increases, which is of concern to investors: 'the concessionaire may from time to time request to adjust the toll rates so that they are fair to the company in light of changes in the economic situation'.
- Government support is to be considered at negotiation stage and assistance for land acquisition is promised. This too has undermined investor confidence.

¹⁷ Proposed Inter-City Motorway Projects in the Kingdom of Thailand for Privatisation', by DOH, May 1998.

After the early contracts, in which individual agencies signed contracts sometimes with no competition, e.g., Hopewell, most projects have involved competition. The procurement, however, has not always been transparent, with charges of corruption sometimes cited as a reason for contract award; and this has reinforced institutional conflict.

3. Project Identification

Thailand is recognized as having particularly difficult institutional problems in the transport sector. This is particularly so in the Bangkok region. There appears to be no effective mechanism for coordinating action, other than the Cabinet.

There has been no formal process for project identification. Symptoms of this problem include the following:

- NESDB produce plans for the sector, but the agencies do not abide by these, and sometimes act in conflict with them.
- Projects contracted in the early 1990's often appeared to contravene the public interest, but serve institutional objectives. Thus, in the northern corridor 3 MRT projects and 3 expressways were contracted. While the national Seventh Plan argued against this, the projects were unaffected, until the recent demise of Hopewell, which has left a legacy of problems.
- There has been little effective project co-ordination: the first project constructed 'wins' in the battle for alignment. This affects the MRT system adversely, as well as the expressways, when ETA and DOH have developed 'competing' projects in the same corridor.
- The projects are sometimes not optimized. MRT systems are required to be underground — presumably because of their visual impact — yet expressways, which are usually considered intrusive (since they are so much wider) continue to be built through the middle of the city.
- The concentration of megaprojects down the main corridors fails to tackle one of Bangkok's central problems - a poorly developed primary road network. This results in massive megablocks undeveloped because they are inaccessible except via narrow, unconnected lanes (sois). Instead of opening up new corridors, the megaprojects are mostly perpetuating them. The increase in compensation payments to market rates has markedly increased this tendency, encouraging Government to avoid costly land acquisition in favor of using existing rights-of-way.

4. Results of the Process: Projects

Table A1.4 and Figures A1.5 and A1.6 summarize the extent, characteristics and status of BOT expressway projects in Thailand:

- There are four BOT expressways operational at present.
- Another four are under construction.
- A substantial pipeline is planned, including a national expressway system.

Table A1.4: Thailand: BOT Expressway Projects

Proje	Status	Cost US\$bn ¹⁸	Project	Contract
Operational				
First Stage Expressway System	Open 1987		27 km	Implemented by ETA (Government project)
Second Stage Expressway System	Open 1993-1996	1.1	39km	ETA/BECL BTO 30 years from contract award. Contractual problems on opening - foreign partners replaced by Thai Includes 60% of First Stage Expressway revenue stream Problems of land acquisition have delayed part of the project
Don Muang Tollway	1995-97	0.3	15 km links airport to downtown	
Ekamai-Ram Indra Expressway	1994-97	0.85	19 km	
Bangkok Chonburi Expressway	1997-1999	0.3	83km	Government (DOH) implementation under JBIC loan. Potential operating concession Tariff/30km: 30 baht - cars, 50 baht -six wheel truck, 70 baht -larger truck
Construction				
Outer Ring Road - west/south				Costly project. West - under construction in floodprone area by DOH as D2/3. Requires south section to attract traffic. South involves major bridge. Government wants BOT for this. Maybe possible if west section tolled. 'Conflict' with ETA proposal for parallel 4th Stage Expressway
Outer Ring Road — East		62 km elevated dual 6 lane link to East Coast		Government (DOH) implementation under JBIC loan. Potential operating concession

¹⁸ Calculated as Thai Baht divided by 38.

Table A1 .4: Thailand: BOT Expressway Projects (continued)

Project	Status	Cost US\$bn	Project	Contract
Bang Na-Trat Expressway		0.65	55km, dual-3 lane	ETA (DOH providing r-o-w) Bilfinger and Berger/ DYWIDAG/ CH Karnchang constructing. ETA to operate 5km section open - 10 baht toll Toll will be 20baht +1/km Domestic financing
Don Muang Expressway — North Extension		0.1	13 km	DYWIDAG
Second Stage Expressway - Northern Extension		0.6	34 km from Bang Pa-In to Pak Kret	BECL - who are by law given the right to price match proposals from others (if any) 30 year concession
Planning Third Stage Expressway North and South sections		1.0	new alignment North: 23 km South: 10km	ETA project. Northern contract awarded to ItalThai/Obayashi/ Nishimatsu but no implementation (possible land problems) Southern no contract award because of alignment problems
4th Stage Expressway System			western orbital inside ORR, plus 2 radials	
Pre-Planning National Motorway System		12.4	4150 km - 13 expressways linking Bangkok to provinces	ambitious 20-year plan Tolls 1 baht/km for cars, 2.3 for trucks
Abandoned Hopewell			Combined expressway, rapid transit and grade-separation of SRT	Abandoned 8 years after contract, less than 20% complete. Solution sought to what to do with partly completed elevated structures
Klong Saen Sep		0.3	18 km expressway over khlong	DOH project. Abandoned after contract award by Cabinet because of conflict with other projects and environmental/flooding concerns

Table A1.5: Thailand National Motorway Plan

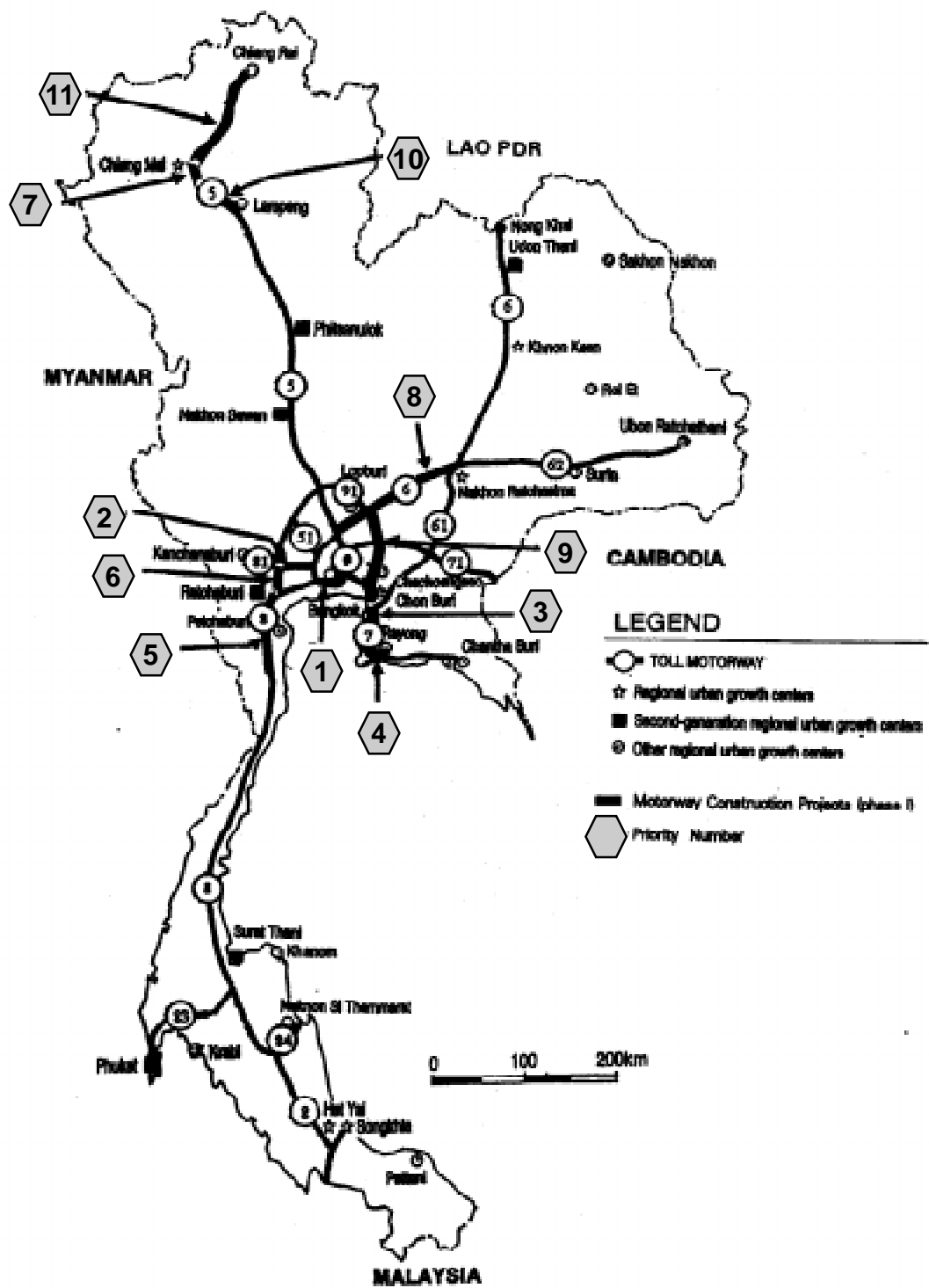
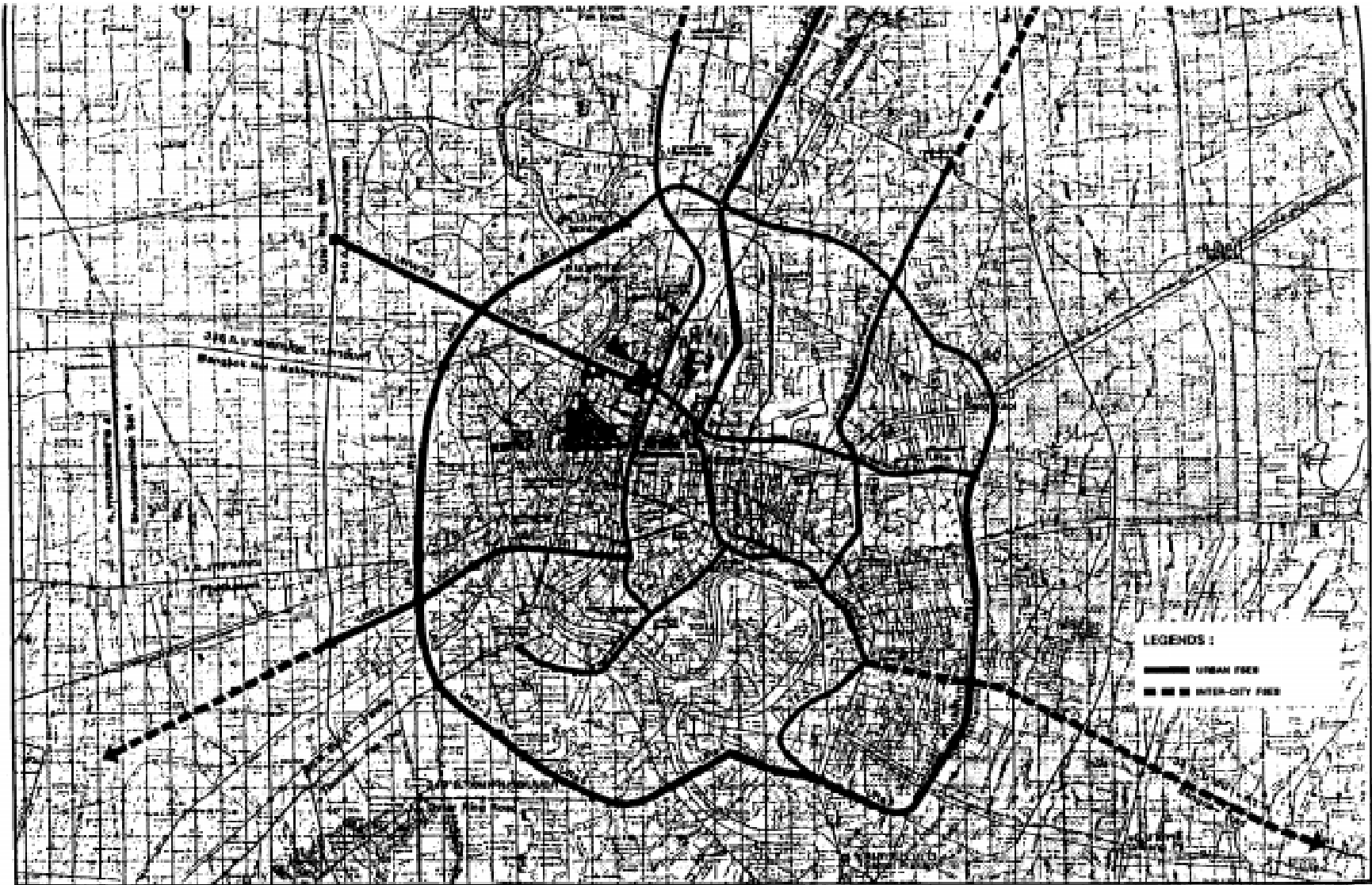


Table A1.6: Thailand - Bangkok Region Expressway Plan



5. Project Case Studies

a. Second-Stage Expressway System

ETA had completed conceptual designs when the project was to be implemented as a public sector project. Consultant Freeman Fox, Kumagai Gumi, and CH Karnchang identified this as a promising BOT opportunity, and carried out the project development purposefully. They concluded that Government support would be necessary. An unsolicited bid (from BECL) was then made to ETA. It proposed that:

- The project should be tendered, but to a tight timetable, limiting the effective competition.
- A definite completion period, providing that in return ETA committed to a timetable for making land available for construction. If this date was not met, BECL would share equally in the revenues from the Government-operated First-Stage Expressway System, and continue to do so on an agreed basis.

The bid-to-award process took 18 months and the construction was implemented purposefully. On the point of opening, however, a dispute arose, with ETA insisting that it should collect the tolls. The outcome was that foreign investors were replaced by Thai investors. Subsequently there have been problems of toll increases not being awarded when justified under the contract, but, by and large, these have taken place.

Land acquisition, while substantially accomplished, has proved intractable for section D (the road was to be built in sections), and this is unlikely to be completed.

The Second Stage Expressway tariff has set the precedent for other projects and is currently 30 baht for cars. There is an electronic tolling system but it is little used.

b. Don Muang Tollway

Under the agreement, Government was required to remove flyovers on the parallel road which competes with the tollroad, and the flyovers were instead to be re-constructed for orbital movements. However, the Government delayed for more than two years and the Transport and Communications Ministry would not allow toll increase (from 20 to 30 baht) until the flyovers were completed. The result was that the tollway collected only one-third of forecast revenues during that period. This lack of revenue meant that the sponsor was threatened with bankruptcy. Renegotiations led to Government compensation and an injection of Bt3 billion, giving Government a 40 percent stake in the concession company. From being a private project it has now become a quasi-government one.

The Don Muang Tollway currently charges 20 baht for cars and 30 baht for 6-axle vehicles.

c. Hopewell

The contract was awarded in 1990 by SRT/Ministry of Transport and Communications. It called for an integrated structure with grade-separated SRT railway tracks, an MRT system and an expressway on the top level - extending a total of 60 kms to the north and east of Bangkok.

Funding was to be from land development profits and the tolled expressway. The project conflicted with parallel projects under implementation, and 'froze' many other projects, because it had access to all the land and air-rights above SRT.

The crash in the property market (which started several years ago), and the latest economic crisis have seriously compounded the problems created by locating three expressways in a single corridor. After 8 years of ineffective implementation the government has terminated the concession. It is now left with a significant problem (what to do with partly-constructed elevated structures), no solution for SRT, and no implementation of MRT on what has always been one of the best MRT alignments in Bangkok. The way to tackle these issues is currently being investigated.

6. Conclusions and Comments

Bangkok's expressways support one firm conclusion: they do not solve traffic congestion. Today there is a network of expressways which is well-used, but results in huge congestion, often on the expressways, and invariably when access to/from the expressways is required.

Other lessons from Bangkok include the following:

- A good procurement process is vital. In Bangkok, the absence of this has produced massive delays, losses for participating private sector companies, and poor results.
- In spite of expectations, expressways are often unprofitable. Second Stage Expressway and Don Muang Tollway - two apparently very good projects - have both required major Government investment.
- Land profits are unsafe as a basis for funding - the abandonment of Hopewell is one example.
- Planning is necessary. Government agencies undertook identification in Bangkok, but there was little co-ordination between them. The conflicts have caused major problems.
- Letting concessions has a high opportunity cost when they are not implemented. They have proved very difficult to terminate, even when they directly conflict with each other. When the networks of expressways and MRT projects are large, this creates a straight jacket, severely constraining Government action.
- Investors, both foreign and domestic, have often been deterred from bidding by a combination of a perception of lack of transparency and corruption in contract award, and an inability to administer legally-binding contracts.
- Land costs have made projects more and more costly to government - partly as a result of increasing prices, and partly as a result of paying proper compensation. This makes projects increasingly difficult to justify, and reinforces the need for prioritization.

The recent crisis has lead ETA to focus on completion of ongoing projects, and the deferring of new projects. The crisis provides Government with a window of opportunity, which an ADB technical assistance grant is now addressing. It has recommended the following action, and discussions are ongoing with Government to comprehensively overhaul the concession process:

- A statement of Government policy for private sector participation in infrastructure would clarify policy and identify/allocate risks to be borne by government and the private sector on a mandatory compliance basis.
- Require mandatory compliance with the NESDB medium/long-term plans and the national 5-Year Plan by all government agencies. Projects should be consistent with this framework.
- Implement changes to the legal and administrative framework to enable efficient processing of proposed projects. This would involve establishing a central coordinating group within the MOF to spearhead the changes.
- Review long-term domestic capital market needs.
- Prepare standard bidding and contract documents and procedures for all government agencies.
- Provide technical support to Government agencies, and require that expert technical assistance be secured for the identification, procurement, and evaluation processes for individual projects.

1. Introduction

The key features of the Hong Kong, China experience are:

- The effectiveness of government planning.
- The effectiveness of a transparent bidding processes.
- The need for a tariff policy on government-tolled facilities.
- The use of different mechanisms for private sector involvement.
- The problems of competition in tolling technologies.
- Innovative mechanisms for establishing the toll rate.
- Under-use of costly transport infrastructure.

For Hong Kong, China, the core objectives of private funding have been to release Government resources for other purposes, and early implementation. Implementation is swifter under private management than Government, and hence road users benefit from the new infrastructure sooner.

All projects to date have been bid on the basis that under the terms of the bid toll and ancillary revenues will create profitable projects. There has been no consideration of negative concessions — in which the government explicitly provides support for unprofitable but economically important roads.

Unlike the rest of Asia, Hong Kong, China has not only involved the private sector in BOT projects, but also in management contracts for Government tunnels, and latterly in a maintenance management contract for the Tsing Ma Control Area.

2. Legislative, Institutional and Financial Framework

Hong Kong, China has 'learned by doing'. Its first BOT project was opened in 1972, with subsequent projects in 1989, 1991, 1997, and 1998. This has allowed the BOT process to be continuously improved.

The involvement of the private sector in infrastructure provision is not forced by funding imperatives, and the case for PSP is less compelling than it might be, given the absence of inefficiency of the bureaucracy. Rather, the Hong Kong, China view is that the private sector should be used where it can best deliver services and that where this is not possible, Government should be made more efficient - e.g., through creating government corporations. This is decided pragmatically. The railways are mostly corporations, which raise private finance. The airport has also been corporatized. Power, telecoms, and ports have all been longestablished private sector activities and recently BOT projects have been developed for refuse transfer stations, landfill sites, and chemical waste treatment.

In the roads sector the government has followed two different approaches to PSP:

- Management contracts.
 - For tunnels (e.g., Lion Rock, Aberdeen). Tenders have been on the basis of what bidders are willing to accept (\$/vehicle) over a four or five year franchise period to operate the toll facilities on behalf of Government, maintain the facility and control traffic. Equipment has been provided by the Government. The resulting bids have all come in below Government's estimates.
 - For the Tsing Ma Control Area (the Airport Corridor), where a fixed price lump-sum contract has been let in view of uncertainty over traffic. This is an innovative traffic control project, developed for a single corridor.
 - The Cross Harbour Tunnel franchise expires in late 1999, when the tunnel reverts to Government. It then intends to let a manage, operate, and maintain concession for 2 years, with the possibility of extension, and toll levels unchanged.
- BOT contracts. Hong Kong, China has a Legislative Council (Legco) comprising of elected representatives who are key to project implementation while the Executive Council (Exco) and civil servants undertake project development. This creates problems for civil servants, with the need for much lobbying to get decisions through Legco.

a. Tariff Policy

The Government has had no tariff policy. Bidders would propose the toll levels, and the Government would confirm an acceptable level during bid evaluation and negotiation. However, a new system has now been introduced, following the Western Harbour Tunnel negotiations. This system guarantees that tariffs will be increased, and is an important support for private sector interest in the process.

Under the old system, it has been difficult for concessionaires to obtain approval for a toll increase. The original Cross Harbour Tunnel had a \$5 toll (cars), then in 1984 a further \$5 'passage tax' was imposed. Since 1984, the toll has not been increased despite lobbying from the concession company. This is because the tunnel is very profitable and 'it provides the people with choice' (and has become an almost un-tolled alternative).

The result is that both the Eastern and Western harbour tunnels have been adversely affected, the latter in particular carrying traffic which is only a small proportion of its capacity. The Eastern Harbour Tunnel took the matter of its toll increases to arbitration, as allowed under the concession agreement. It won the case, but the uncertainty associated with this provided a major disincentive to potential concessionaires.

The toll differential for cars is HK\$30-10-15, for the WHT-CHT-EHT. It is therefore not surprising that the Cross Harbour Tunnel (dual 2-lane) attracts the vast majority of traffic, with about 120,000 vehicle per day (vpd), compared with 35,000 in the Western Harbour Tunnel (dual 3-lane) and 80,000 vpd in the Eastern Harbour Tunnel (dual 3-lane). The Western Harbour Tunnel traffic has been increased somewhat by petrol coupons and toll discounts.

The new system now provided includes:

- A schedule of defined tolls, and years when increases will take place, and the size of those increases.
- A range (low-high) of allowable financial internal rates of return for the project (e.g., 15-18 percent).
- A range of net revenue projections over the concession period (revenues minus operations costs minus interest payments).
- A seat on the concession company Board for Government.

Each year, the company is required to submit audited accounts and the resulting 'net revenue' to the Government, to compare with the projections. When the franchisee's revenue is more than the amount projected, the excess is placed in a Toll Stability Fund. Government has the right to use this money to defer a toll increase which would otherwise fall due. When the franchisee's revenue is less than projected, the Government may use the fund to top up the franchisee's revenue to the minimum agreed level. If the balance of the fund is insufficient to do this, the franchisee may bring forward a toll increase, subject to vetting of accounts by the Government. If moneys remain at the end of the concession period, they revert to the government exchequer.

The result of this approach is to:

- Reduce downside risk to the concessionaire who may receive revenue support and/or is allowed to bring forward toll increases, if the fund is cash-rich.
- Provide upside cash for government.

The key issue reinforced by the existing economic turndown is still, however, the traffic in the early years. If that is low, then there is no fund to support revenues, and the limit of the support to the concessionaire is to allow flexibility in tariff changes.

There remains concern that the existing process is leading to costly infrastructure being under-utilized.

b. The Bidding Process

The Hong Kong, China bidding process is transparent and follows on from the Government feasibility study and preliminary design. A detailed project brief and conforming design is produced. The upcoming bidding is advertised and advised through consulates widely. The Government lays down three imperatives:

- Investors must build the facility to a fixed cost and within a fixed time.
- The shareholders must guarantee revenue in the first 5 years.
- Investors must fund their equity - and be joint-and-severally liable.

The process then proceeds as follows:

- Interested parties collect the bidding documents for HK\$1 million. There is no short-listing procedure. Tenderers are typically given 4 months to submit their bids. These must include the conforming design, but may include alternatives.
- Three government committees (finance/administrative, traffic/transport, and land/engineering) evaluate the bids, independently of each other, over a 4-week period. An independent member of the anti-corruption force is in attendance at such meetings.
- Bidders are given two opportunities to refine their bid, after clarification is sought by the Government where necessary.
- The bidders are progressively narrowed down, the intention being to competitively negotiate almost to a conclusion. The authority of Exco is sought before negotiations with 1 or 2 bidders commences, and again to confirm the terms of the finally negotiated bid.
- The bidders are required to submit a fixed cost and fixed implementation time to operation. This requires bidders to obtain fixed prices from their contractors, with back-to-back agreements. The result is to substantially remove cost and time risk for the concessionaire, and all projects have opened early, with contractor and concessionaire sharing the excess income generated. Contractors have learned to accept this approach providing there are no subsequent changes.
- The key evaluation criterion is lowest tariff.

The Government has had access to a pool of international experts in the technical, financing and legal disciplines, who have assisted the effective implementation of the BOT process materially.

Hong Kong, China appears to be different from other countries in the region in that its concessionaires are often not the major contractors. Originally the contractors led. The Government prefers concessionaires not to have contractor equity.

What has changed the picture is not government guidance on the composition of bidding consortia, but:

- Contractors do not now have the funds for equity investment. This was the case - Nishimatsu for example were prepared to take up virtually all the equity for Tate's Cairn, whereas now they may be prepared to take 15 percent. The Japanese contractors are hurting badly due to the recession and to domestic problems.
- Conversely, property developers do have cash to invest and some projects are linked to property development. The Route 3 project goes through massive land holdings of Sun Hung Kai, the lead investor.
- Maybe increased competition with the need to submit a keenly priced bid.

The situation is as follows:

Project	Concessionaire (and original shareholding) ¹⁹	Contractors
Eastern Harbour Tunnel	100% - Kumagai Gumi (now CITIC have a stake)	Kumagai Gumi
Tate's Cairn Tunnel	37% - Nishimatsu 25% - New World 20% - China Resources 18% - C Itoh, Jardine, Trafalgar House	
Western Harbour crossing	35% - CITIC 35% - Cross Harbour Tunnel	Gammon, Kumagai Gumi, Nishimatsu
Country Park (Route 3)	50% - Sun Hung Kai 50% - 3 Chinese group (China Resources, China Travel, Bank of China)	Nishimatsu, Gammon Dragages

The evidence from Hong Kong, China's experience is that:

- The bids have attracted very strong concessionaires and contractors - giving Government confidence that they will deliver on the very demanding projects offered.
- There was only one bidder for WHC. A further bidder comprising the Cross Harbour Tunnel Company and CITIC pulled out when they received high fixed cost bids from their contractors. In this case the bidding nearly failed.
- Negotiations have resulted in major reductions in bid prices.
- Contractors 'volunteered' to take on risks to sweeten their bid. Thus, Nishimatsu were prepared to take on the risk that the Government may not have resumed all the land (i.e., the resulting risk of delay).

The change in tariff adjustment introduced during the WHC negotiations, was too late to stop the only 2 bidders combining, which undermined Government's negotiating position.

Government provides all land unencumbered at no cost, and also often a substantial investment in access roads. All other costs must be paid from toll and ancillary revenues.

How profitable are Hong Kong, China's BOT roads? In Hong Kong, China, there has been up-front Government support, land has been provided free and approach roads beyond the immediate vicinity of the tunnels, have been funded by government. Given this, the financial viability of the concessions is summarized as follows:

¹⁹ The Cross Harbour Tunnel Company wanted to be involved in WHC, because their concession runs out in 1999. CITIC wanted to be involved in WHC because they were involved in Eastern Harbour Crossing - and with the Cross Harbour Tunnel tolls low, WHC and Eastern Harbour Crossing competed.

- Cross Harbour Tunnel is hugely profitable. The 30-year franchise concludes in 1999, and Government is considering what to do then.
- Eastern Harbour Crossing is probably OK. Traffic was lower than forecast for the first 2/3 years because the linking infrastructure was not open, but is now close to projections.
- Tate's Cairn Tunnel is in trouble. No dividends have yet been paid to shareholders (it opened in 1991). It suffers from 'competition' from Lion Rock Tunnel, which is government-tolled. The banks will suffer if there is no success in increasing revenues. The concession company has gone to great lengths to attract traffic - e.g., offering petrol tickets (giving discounts at Mobil stations). They have tried reducing tolls - but lost revenue. Originally they attracted almost 100 percent of trucks but the Lion Rock tunnel charges \$6 flat (irrespective of truck type), and Tate's Cairns now carries very few trucks.
- WHC is in trouble, with revenue much lower than forecast. Its success depends on the Airport/Route 3 corridor, and the Government policy on tolling the Cross-Harbour Tunnel. The financing is all non recourse and the banks will suffer if it is not profitable.
- Route 3 opened late in 1998 and early reports are that traffic is much lower than forecast. Its HK\$15 toll has failed to attract motorists despite the considerable saving in time that the tunnel offers over the alternative free, but much longer routes. Traffic was recently reported as 33,000vpd, compared with a tunnel capacity of 135,000vpd.

Thus of the five projects, there is one definitely profitable, one or two probably profitable and two or three in trouble.

3. Project Identification

The Hong Kong process is dramatically different from the rest of Asia, with a thorough and effective process being led by the Government. There are a series of Comprehensive Transportation Studies (CTS), updated every five years. These determine future strategy. They are supplemented where necessary by sectoral studies, for example, the second Rail Development Strategy has recently been completed. Government is actively involved in these studies, making sure it 'owns' their results. One result of this process is that the uncertainties of future development strategy and transport strategy are much less than is the case in most Asian countries.

Projects can also be identified by the private sector. In this case the project is subject to the same subsequent investigations as would be expected in a publicly-identified project and to competitive bidding. The only advantage for the unsolicited bidder is the lead-time he has in studying the project.

There are currently two competing tolling technologies, providing non-stop passage at toll plazas for vehicles with tags. The tag companies require drivers to have a bank account in credit, and they are billed periodically. It is clearly inconvenient when drivers pass through different tunnels remembering which requires which tag, and the 2 companies have now merged, resulting in one technology applied across all tunnels where auto-tolling has been introduced.

It is likely that there will always be a dual system (electronic tags and manual) because:

- Government does not wish to force drivers to open a monthly account.
- The tollgates are a means of merging many to 2 or 3 lanes, and controlling the traffic flow.
- The tags provided are a way of 'jumping the queue'.

4. Results of the Process: Projects

Table AI .5 and Figures AI .7 and AI .8 summarize the extent, characteristics and status of BOT expressway projects in Hong Kong, China:

- There were four BOT expressways operational at the time of the case study visit.
- One other was under construction (this opened in late 1998).
- An update of CTS is underway, from which a pipeline of projects will be identified, and from which other BOT projects are likely to emerge - but it is expected not many.
- The projects, often tolled tunnels, include the expressway accesses either side to the first turn-off/last entry ramp, and the concessionaire is required to manage this, control the traffic, and maintain it

It is expected that about HK\$200 billion will be spent on the roads sector over the next 8-10 years, with most projects underway by 2002-2003.

Table A1 .5: Hong Kong, China: BOT Expressway Project Characteristics

Project	Status	Cost US\$ billion ²⁰	Project	
Operational				
Cross-Harbour Tunnel	1972		1.9km	BOT (reverse tender) - government has 25% stake Cross Harbour Tunnel Co. (Wharf) traffic 124,000vpd (1996) Car toll HK\$10 (5+5) BOOT contract Kumagai Gumi consortium all equity, except government 7.5%
Eastern Harbour Crossing	1989	£340mn \$0.54mn	Road and MTR 2km immersed tube linking Kowloon and Hong Kong Island	From government study, then innovative pre-emptive bid, then tender issue of raising debt for period covering handover Lack of traffic, since complementary infrastructure not being open Traffic 88,000vpd (1996) Car toll HK\$15
Tate's Cairn Tunnel	1991		4km tunnel, links NE New Territories to Kowloon	Traffic 74,000vpd (1996) Car toll HK\$8 (Lion Rock tunnel HK\$6)
Western Harbour Tunnel	1997	HK\$5.2bn \$0.7bn		Guaranteed return to shareholders Freedom to raise tariffs if projected revenue schedule not met Traffic 21,000vpd (April '97) Car toll HK\$30
Construction				
Route 3 — Country Park section	Opens 1998	US\$ 0.93bn	Link - southern China to Hong Kong Island, via port/new Airport. Country Park section to Yuen Long-dual-3, 10.1km, incl 3.8 km tunnel	BOT, 30-year concession Car toll HK\$15 on opening Made viable by excluding a major bridge Concessionaire Sun Hung Kai Group, China Resources Excludes property development (problems of Chinese agreement)
Planning/Pre-Planning	The CTS-3 is underway. This will identify the major road infrastructure. This could cost HK\$200 billion over the next 8-10 years, with most projects starting by 2002. The involvement of the private sector in funding has to be determined (see text)			

²⁰ Calculated at official peg: HK\$7.8/US\$1, and assuming £1 =HK\$1 2.5.

Figure A1 .7: Hong Kong, China Road Proposals - Urban Area

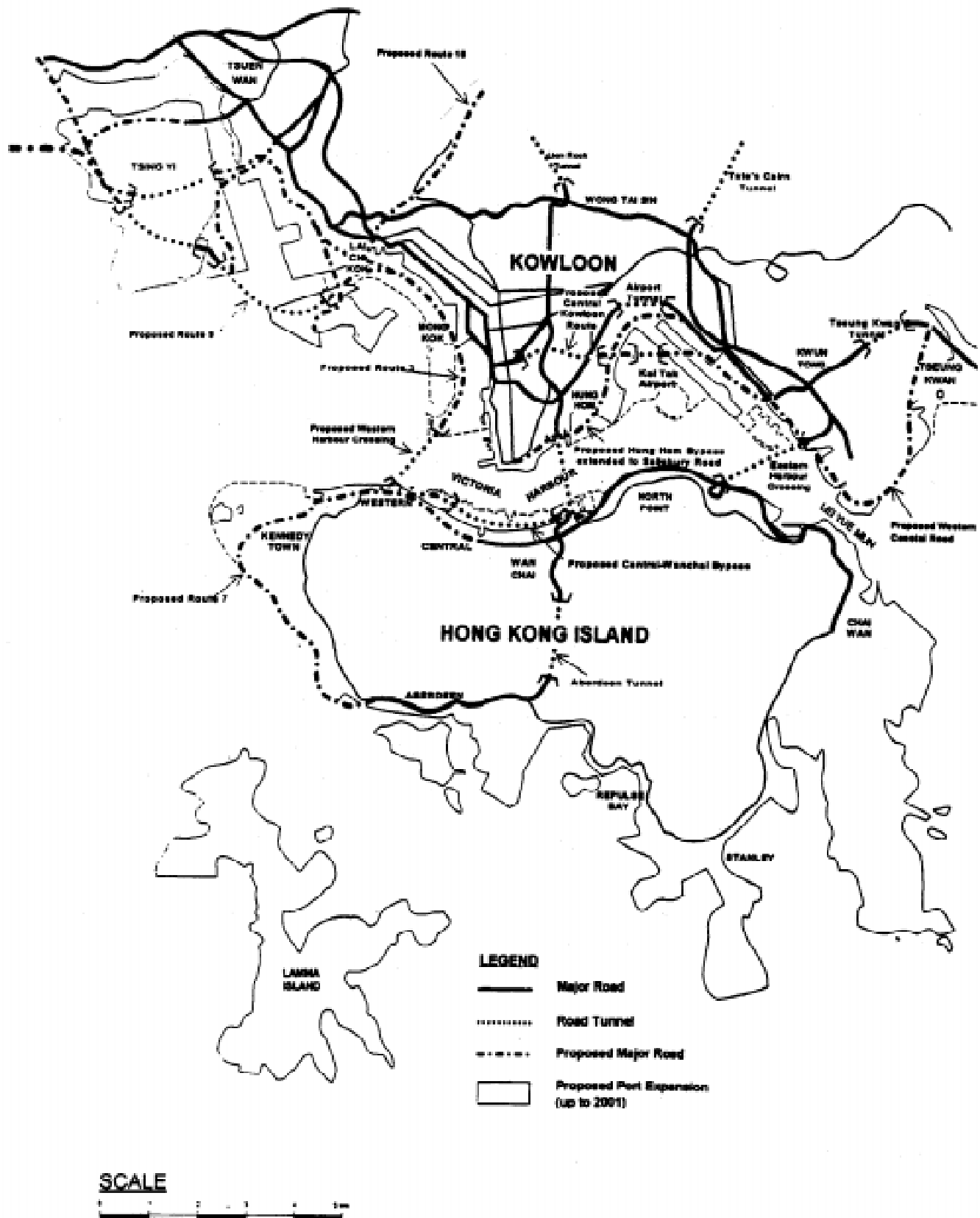
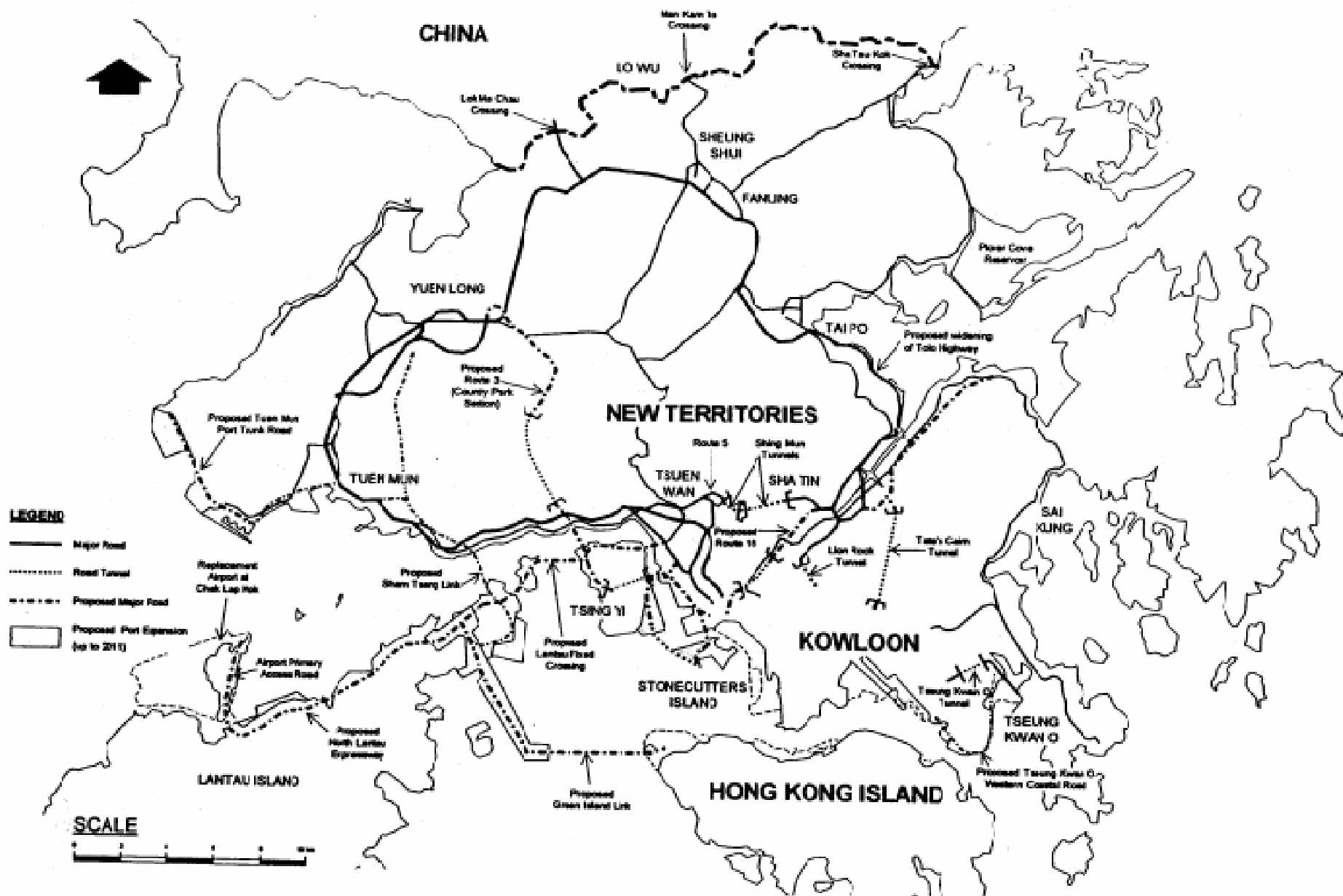


Table A1.8: Hong Kong, China Road Proposal – New Territories



The roads vary in their traffic levels. Cross Harbour Tunnel traffic is at capacity with more than 100,000vpd. The Tate's Cairn traffic was within 2 percent of forecast on opening and now carries about 75,000vpd, but with a capacity of 100-105,000vpd. The WHC is carrying around 30,000vpd compared with an expected 65,000; the opening of the airport and Route 3 were expected to improved this situation greatly.

All operators use advertising etc. to increase their revenues by around 5 percent.

5. Conclusions and Comments

In terms of process Hong Kong, China's system is without doubt Asia's leader, through its combination of:

- A territory which is amenable to BOT - because of hills and the harbor which need crossing. The BOT projects comprise three harbor crossings, one land tunnel, and one land tunnel combined with Route 3.
- A Government which has an effective integrated land use/transport planning system. This reduces uncertainty as to future development, and the future transport network, as well as allowing the suitable BOT projects to be identified.
- A Government which over 25 years has learned pragmatically as projects have been developed (they have opened in 1972, 1989, 1991, 1997, 1998).

The process has been improved to seek the right balance between:

- Government's interests in not providing guarantee or investment.
- User interests in low tariffs.
- Concessionaire's interests in a reliable financial return.
- Lenders interests by putting a floor under the downside risk.
- A dynamic market of investors, contractors, bankers, and consultants.

Much of this has been accomplished when political uncertainty surrounding the lead up to the 1997 handover has made financing problematic.

Over the period, five major BOT projects have been completed, one every 5 years on average. Each has involved massive effort by Government throughout the planning, implementation, and operational phases. It may be conjectured that in terms of person-months effort the Hong Kong, China Government and its advisers spend many, many times the effort of most other Asian governments in planning and procuring BOT projects. The results are projects which promote public policy, secure innovation, and the benefits of competition.

Alongside BOT projects, Government has let management contracts for Government tunnels, and latterly for the innovative Tsing Ma Control Area.

Hong Kong, China has, in the past, transferred the vast majority of risks to the concessionaire, and provided no guarantees. This was very successful with the first project, the Cross Harbour Tunnel. Subsequent tunnels have not been so successful, requiring higher tolls to make them viable, and problems from the competition created by the cheaper tolls of the centrally-located Cross Harbour Tunnel. In the future, government recognizes it will have to assume a greater proportion of risk if private sector financing of road infrastructure is to be forthcoming.

Looking ahead, a massive new roads program is envisaged, more than HK\$200 billion over 8-10 years, with most projects starting construction by 2002. Perhaps surprisingly, however, there may not be much more private funding of Hong Kong, China's transport infrastructure. The main reasons are:

- A lack of suitable projects - most major corridors will have a tolled bridge/tunnel operated by Government or the private sector. So far, Government has not considered reverse tender BOT projects, in which it would invest.
- The size and riskiness of some projects, which are not amenable to private sector funding.
- The availability of parallel 'free' routes.

There may be opportunity for far more corridor management by the private sector, but as yet there is no view that this should happen.

It may be conjectured that with speculation about the RMB and HK\$, Government will not be able to avoid shouldering the foreign exchange risk in the future.

The big problems to date have been:

- Tariffs and tariff increases. The new approach described above does much to reduce this.
- Parallel Government tolled facilities. This has caused severe problems for some concessionaires. In the future, Government policy may have to change, with bids for future concessions sought on the basis of specific tolls levels and their future increases.

OTHER EXPERIENCE

A. People's Republic of China (PRC)

1. Context

Historically, there has been little travel between cities, and PRC depends upon the rail system (and lately air transport as well) for the main inter-urban movements. The road system is poorly developed. Most roads are single 2-lane carriageways, although some dual-carriageways exist. Provinces often impose tolls on road users at irregularly spaced toll plazas. Typically, the traffic using the existing road system includes animals and bicycle traffic, farm vehicles such as small tractors (rotovators on wheels with trailers), a high proportion of goods vehicle, and few cars. Average speeds are low, accidents frequent, and congestion can be severe as the high proportion of slow vehicles reduces road capacity.

Traditionally, road construction has been the responsibility of the public sector, with construction undertaken by government and the provinces. Some provinces have set up specific departments to manage expressway construction, although these are always subservient to the province for revenues.

2. Government Policy

Government used to be strongly against tolls, but it is now supportive and developing policies for tariff setting, provision of tax exemption during the debt service period etc. Almost all expressways in PRC now collect tolls. Operations are complex, involving government and provincial corporations. The tolls vary by location and project.

Government has determined to construct a large National Trunk Road System, linking all cities greater than 0.5 million people (Figure A2.1). This will comprise 12 trunk highways comprising 35,000 kilometers of expressways (like the US interstate freeways). Many World Bank (e.g., Beijing-Tianjin, Xiamen-Guangzhou) and the Asian Development Bank (ADB) projects comprise sections of this network, implemented under loans to Government or provinces.

Funding for roads comes from a combination of:

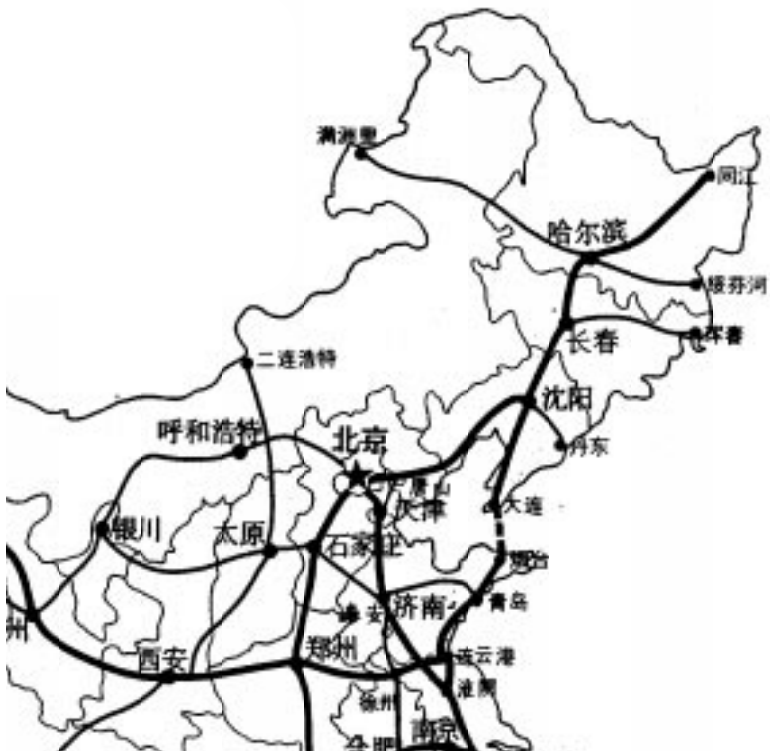
- The State (a Ministry of Communications support which used to be around 3 million Rmb/km for any expressway on the planned network - and is now a loan).
- The Provincial budget - taxes and user charges which include tolls on existing roads.

Increasingly, expressway financing has moved from central to the provincial authorities, who access private funds and foreign capital markets.

Cities are treated differently and are under different jurisdiction. Expressways are more difficult to develop in urban areas for the usual right-of-way reasons, but both Shanghai and Guangzhou have a ring road system, and Beijing has a tolled expressway to its airport.

Government has recently announced a massive investment program in infrastructure, and is about to finalize a framework (for build-operate-transfer (BOT), corporatization, concessioning, leasing) and Implementing Rules and Regulations which are intended to 'open China' to foreign investors. The currently unclear and complex approach to private sector funding may then become clearer.

Table A2.1: China National Trunk Road System



3. PRC is Different

PRC is different - because toll roads are often 'profitable' - that is the toll revenues are adequate to fund their capital, operations and maintenance costs and provide an acceptable return to shareholders. This is because:

- Capital costs are low, inputs are often not costed at market prices, and technical standards are 'appropriate'. Typically, toll roads in PRC are built with large contingents of local labor mobilized by the local Governments, together with local materials. The sole non-local component is the thin blacktop at the end, and the sole high-tech. machinery is that required to apply it. The result is a very low capital cost.
- Revenues are high. This is a combination of:
 - High traffic diversion to the toll-road at opening: the alternative is either nonexistent or heavily congested, so that the time savings are large.
 - Relatively high tolls, which are acceptable (there is little history of resistance to government-imposed tariffs).
 - Tolls are often a small proportion of the perceived total journey cost (which includes provincial taxes, routine bribes to the police, and fuel). Hence, they are regarded by many companies/drivers as 'good value for money' given the large time saving over the alternative congested road, with more efficient use of the vehicle resulting.
 - High traffic growth, a result of rapid economic growth, and a lack of alternative routes.

4. Private Sector Participation (PSP) Practices for Toll Roads

Most of the concessionaires for privately-financed toll roads have been based upon joint ventures with public entities. These may be foreign-owned, equity joint ventures or cooperative joint ventures. The latter is most common, allowing flexibility in the allocation of rights and obligations between the local and foreign partners.

Traditional forms of project financing are rare in this sector, and most foreign financing is sourced from equity investments and shareholder loans to cooperative joint ventures in PRC from the parent company abroad. These funds are typically raised through a public offering of shares, or through commercial loans; for example, nine PRC highway stocks had been listed on the Hong Kong Stock Exchange by 1997. In a few cases conventional project financing has been achieved, with the public sector entity guaranteeing the revenues of the project company.

It is estimated that 2,800kms of expressways have passed into private hands in the last 5-6 years, raising some US\$5 billion-US\$6 billion of private capital. There are about 800 concession agreements, all of which are either leasing or Buy-Operate-Transfer. Typically, an upfront payment is made by a developer, the proceeds of which are used to further develop the network. There are no conventional BOTs.

5. Key Issues

Much has been learned in this sector, and both ADB and the World Bank have been active in assisting government develop its policy framework for PSP. The main issues which have arisen include:

- Concerns with asset securitization. This is in widespread use, an existing asset (e.g., an expressway built under multilateral funding assistance) has been used to raise finance from foreign investors. Typically, construction/completion risks are carried by the Government entity, and the Government accesses additional financing readily, while the prospect of returns from tolls are high for the private sector. The concern is twofold: that the assets may be over-leveraged (compromising the ability to repay the original loan), and that use of the capital markets may not be a secure source of funding, in the event of the boom-bust characteristics of many stock markets. This is a particular concern in the light of the recent crisis.
- Need for reform to the legal and regulatory environment. There are many problems at present, including the fact that the currency is not convertible (and access to foreign exchange when it is required), limitations on provisions of guarantees by Government, no automatic increases in tolls, institutional complexities when central Government is involved etc.
- Land acquisition has led to frequent delays, and the private sector has been expected to shoulder unreasonable risks. Capacity building in Government and adequate compensation are required to remedy this.
- The credit-worthiness and commitment of public entities has sometimes frustrated and delayed development in the sector, and substantially increased costs due to the resulting risks.
- Toll levels - there has been early resistance to the level of tolls on expressways, which can be relatively high (over seven US cents/km for large cars on some roads). Traffic flows are certainly low on a number of expressways near major cities (e.g., around 10,000vpd on the Beijing-Tianjin expressway, and even less on both Shanghai-Jiading and Shanghai-Xinshang-Sungzeng). However, a more commercial approach to the problem is now evident. Thus, truck drivers are now often reimbursed by their firms for toll receipt tickets collected when they use the expressway (ensuring they use the expressway), and different rates may be applied to 'foreign' and local vehicles (see below). When tolls are not excessive, there is now little resistance to them. Most of the traffic on the inter-urban network comprises goods vehicles and buses - cars are still the exception and are usually owned by Government entities.
- Need for transparent procurement processes – private negotiation rather than competitive bidding is the common practice. The negotiations have sometimes lasted many years and after the event, have been found unsatisfactory (understandings have not been delivered).

The role of ADB and the World Bank has been important in increasing the effectiveness of the PSP approach in this sector. An ADB-funded study of the road sector in PRC, completed in 1998, concluded that construction risk is best left to the public sector, but that when expressway

traffic grows to a sufficient level, leasing or securitization should be considered to mobilize private capital for the sector.

Often *ad hoc* deals take place, based upon relationships between Hong Kong, China or Taipei, China investors and a city - maybe from which they originate. Alternatively, government development companies may be given the task of implementing a required project, and they may have stakes in foreign contractors. These deals involve no competition, and may have a wide range of incentives and obligations.

6. Kumagai Gumi (Hong Kong, China) and Everbright¹

Kumagai (Hong Kong, China) recently became partly owned by China Everbright - a PRC Government development company. They expect thereby to become substantially involved in infrastructure development in PRC. The mechanism may typically be:

- The mayor or governor of a municipality/province identifies the need for a project (e.g., a bridge or expressway), and sells the concept to Beijing.
- Beijing decides that it warrants investigation and requests one of its development arms (such as Everbright) to look at its feasibility.
- Subject to a satisfactory outcome it is then requested to negotiate a deal with the appropriate authority, and then implement the agreement.
- Kumagai (Hong Kong, China) are then given a contract by Everbright on agreed terms to manage implementation, employing sub-contractors as necessary.

This approach offers attractive prospects to foreign firms, minimizing their risk, while providing their expertise in developing PRC's infrastructure.

There are, however, many other problems, and these are acting as a constraint on the future development of the road system, with some developers generally cautious about making this type of investment in PRC. The case study of Hopewell Holdings illustrates the issues:

7. Hopewell Holdings²

Hopewell's much-publicized involvement has been in the Hong Kong-Guangzhou-Zhuhai 'golden triangle', conceived as part of a strategic vision (Figure A2.2). This is notably different to the ad-hoc projects seen elsewhere in Asia, and is innovative in concept, the individual projects linking to, and reinforcing each other. Their characteristics and status are as follows (Table A2.1):

¹ This is based on discussions in Hong Kong, China.

² Interviewed as part of the Hong Kong, China case study.

Table A2.1: Hopewell Holdings PRC Projects

Project	Status	Route-kms	Other
Guangzhou-Shenzhen-Zhuhai (GSZ) Superhighway:	A non-stop expressway.		30 year operating franchise from 1997. Hopewell Holdings receive 50% of profits for Years 1-10, and about 45-50% for the next 20 years.
• GSZ East to Shenzhen	Parallel Route 107 Has a low level of service, with tolls charged at some bridges	123kms, closed toll system	Tolls increased twice. 71,000vpd in 1997 (20% increase over 1996)
• GSZ West to Zhuhai	Part opened 1994 - 22 out of 58 kms	58 kms	
Shunde Roads	Opened 1996. A high-class road system with shoulders, but some level crossings	102 kms D3 highways - development of a primary road network on west shore of Pearl River 8 toll plazas	30 year operating concession from 1996 Hopewell Holdings receive 50% of operating surplus from jv company 94,000vpd in 1997, 30% increase over 1996
Shunde National Route 105	Preliminary agreements with the Municipality. Phase 1 (16kms) approved.	41 kms upgrade of existing road	Cost RMB1 .5 billion Hopewell Holdings has 30% interest, for a 28yr cooperation period
Guangzhou Ring Road (East-South West):	Partly open (tollgate in a short section)	38kms	30 year operating concession Hopewell Holdings has 37.5% equity stake and are assured of a 20% return. They receive 100% of operating surplus of jv company for years 1-10, 40% thereafter
• South-East	Construction		
• South West			
Boca-Tigris Bridge	Opened May 1997	16 kms across the Pear River delta	30 year concession period Traffic 1 6,000vpd in Aug 1997 Hopewell Holdings has 10% equity, and receives 7% of net operating surplus from jv
TOTAL NETWORK		379 KMS	

- The concept for the expressway came after PRC's 'open-door' policy of 1979. In 1983 Sir Gordon Wu became involved in a hotel development after experiencing brownouts, hence a power station, and then this expressways concept.
- The various agreements reached depend for large measure on agreement being reached about many issues - they were not water-tight contracts. The contract allows a 15 percent FIRR for the tolled expressway, together with land development.
- Funding is from a US\$800 million syndicated loan from 34 banks (60 percent) and 40 percent equity. Income is in RMB or HK\$ - i.e., foreign exchange risks.

- Land acquisition and costs have been a major problem. The GSZ requires a continuous strip of land 123kms long and 50-80m wide:
 - the contract said 'government would help' - but responsibility was with Hopewell Holdings, who did not have the power to make it happen.
 - Hopewell Holdings are liable to land costs, which the government determined should be at market rates.
- These factors resulted in a 3-year delay in implementation.
- Once problems of acquisition were settled, construction was rapid.
- Hopewell Holdings had understood that Hong Kong-plated cars would be allowed to travel relatively freely into PRC - for example for day trips to Guangzhou. But this has not been allowed by the Hong Kong, China Government, and traffic is lower than expected.
- Tax has been problem - Hopewell Holdings are required to pay taxes on gross revenue as well as withholding and land tax. There have been differences as regards the intent of the concession agreement.
- Property development has been a problem. This has been frustrated by difficulties in transferring land rights, allowing changes in permitted use and requiring that social facilities be linked to development. Little has yet happened, and the recent property downturn has reinforced these problems.
- Petrol stations are being leased along GSZ East, together with facilities for buses, restaurants, vehicle service centers and car parks.
- Technical standards - there have been differences concerning road capacity and standards.
- Tariffs are as follows:
 - Different tariff for Hong Kong-plated vehicles and PRC vehicles, with trucks 4/5 times, and buses 3/4 times the car tariff. Note that Hong Kong-plated vehicles pay double the PRC rate³
 - Toll increases are by application to the Price Bureau, not automatic. Hopewell Holdings have succeeded twice in raising tariffs.

³ The actual tariffs on the Guangzhou-Shenzhen Superhighway are:

Vehicle class	PRC: RMB/km	HK: HK\$/km
Car, small van, mc	0.6	0.8
Light goods, light buses, vans	1.2	1.6
Medium goods, medium buses	1.8	2.4
Large goods, large buses, trailers	2.4	2.6 (after discount)
Multi-axle vehicles, 40ft container trailers:	3.0	3.2

- Hopewell Holdings are looking to market the road to truck operators to increase traffic -an innovative approach.
- Traffic:
 - Traffic is 71,000vpd (1997) on GSZ East. Since a poor start at 38,000vpd in 1994 to 49,000 in 1995, 59,000 in 1996.
 - PRC-plated traffic is in line with forecasts, but Hong Kong, China vehicles are low because of the unanticipated delay in relaxing cross-border restrictions.
 - Traffic is mainly buses, trucks and container-trucks, not cars.
 - 90 percent of revenue is from PRC vehicles.
 - 30 percent growth in toll revenue in 1997 over 1996.

Figure A2.2: Hopewell Holdings PRC Projects



B. Indian Sub-Continent

In recent years India, Pakistan, Bangladesh and Sri Lanka have endeavored to progress participation of the private sector in the provision of roads. There have been flurries of international interest in all four countries, but progress has been at best very slow. Of all sectors of infrastructure, the roads sector is recognized as the most risky, even in countries where there is a demonstrable ability to pay for road use. The risk is substantially higher in countries where no track record - either of successful PSP or public acceptance of toll roads - exists.

It is concern over the limited economic capacity of users in the Indian Sub-Continent to pay for road space, which has dissuaded potential investors. This could be partially offset by government guarantees or at least an understanding of, and realistic sharing, of project risks. But in countries with a recent history of, and ongoing evidence of, civil unrest, strong labor union influence, and political instability, government commitments may not count for much. India has made the most sustained effort to attract private investment in its roads.

1. India

There are about 39,000 km of National Highway, less than 5 percent of which is 4-lane, about 80 percent 2-lane, and the rest is single lane. Since 1991, the Government of India has adopted a more liberal attitude towards private sector involvement in the management and development of the country's road system. In 1994 the Ministry of Surface Transportation actively promoted the development by the private sector of a "super national highway" ultimately to be 10,000kms of dual-carriageway segregated route along the main national corridors. The plan was to let PSP concessions first for a few well-trafficked routes to be followed by further concessions with roads opening throughout a 30-year development period.

State governments also actively promoted private sector involvement, since they saw PSP as a means of achieving their own shopping list of roads projects, invariably with no real appreciation of the requirements of a bankable project.

The Government took important steps to attract the private sector, including necessary legislative changes to expedite toll road concessions, but despite this it became apparent that major expressway projects could not attract international interest without substantial Government guarantees. Not surprisingly, international interest soon waned, but domestic investors remained positive, and positioned themselves for the time when Government expectations might be more achievable.

The plans for a whole new expressway network have now been shelved and the Ministry of Surface Transportation plans to four-lane about 14,000km of the existing network over the next 10 years. The priority corridors linking Delhi, Bombay, Madras, and Calcutta total 6,000km, and 5,000kms of this has still to be widened. Technical project preparation is in hand for most of this length.

About eleven BOT concessions have been let, all small projects - bridges and bypasses, to major Indian players. These projects require relatively low long-term capital investment, and have a more easily-captured revenue.

Tolls are being charged on a section of the Delhi/Bombay road. A franchise for toll collection was let, but the concessionaire is facing problems because of low traffic. In India, it

has proved important to keep the truck drivers (highly unionised) happy, and relations between state and the central government are sometimes problematic, frustrating project development.

It is envisaged that much of the planned network upgrading will be funded through the World Bank, but the Ministry of Surface Transportation is trying to define criteria for the selection of lengths which could be viable for private sector funding. Government has put one rupee per liter “road tax” on the price of petrol (not diesel yet), and this could provide public funding support for PSP deals.

2. Pakistan

Prior to 1995, the Government of Pakistan, through the National Highway Authority, had offered a variety of projects to the private sector for development on a BOT basis. Generally, the projects were not well prepared and were not supported by independent feasibility analysis. This resulted in international bidders having serious doubts about the credibility of the National Highway Authority and its ability to understand and therefore to deliver any commitments made. Recognizing this, ADB funded a technical assistance project to prepare a comprehensive plan for PSP in the road sector, covering policy formulation, institutional development, the preparation of model procedures and documents, and the identification of projects worthy of detailed feasibility study. A private sector cell within the National Highway Authority was set up, among other things to administer a proposed Private Sector Highway Development Fund.

The Government has initiated a major (US\$5 billion) motorway program, but lack of professional resources to administer the program is likely to undermine credibility. A number of projects have been promoted, but none yet implemented as BOT.

The operation and maintenance contract for the recently opened Lahore-Islamabad Motorway — constructed using contractors credit — is reportedly being awarded to a private consortium with international members, which is also seeking to complete and operate the Lahore Bypass and Lahore Ring road within the same contract.

3. Bangladesh

The Government of Bangladesh has signaled its intention to bring about economic reform and take measures to attract private sector investment in infrastructure. Emphasis has been put on the power sector and in 1996, the Government established a Power Cell, charged with coordinating the country’s private power program, which it is doing with notable success.

In the road sector, the only initiative taken by the Government (and World Bank) to date has been the evaluation of the Dhaka Eastern Bypass as a BOT project. As part of the consultancy study, model procedures and documentation were prepared which could form the basis for road sector PSP policy and plans. Realistically, however, this should be viewed as the first step towards developing an appreciation by the public and private sectors of the realities, opportunities and limitations of PSP in the country’s roads sector.

To build upon this start and spread the program to other sectors of infrastructure, the Government, with international support, has established a Private Sector Infrastructure Development Fund and an organization to administer it. But realistically, the road sector will need to fall in line behind power and telecommunications which will be perceived by private investors as providing better, less risky opportunities.

4. Sri Lanka

The country's Road Development Authority does not have the resources — financial or professional — to progress major road schemes. The Airport Expressway (ColomboKatunayake) has been a Road Development Authority priority since the early '80s, with no progress made as yet. The Road Development Authority has offered the project for PSP and international companies have made exploratory investigations. If any corridor can offer a viable PSP scheme, then it must be this one. The fact that international interest has not resulted in any positive moves suggests that it could be some time, dependent upon improvement in the internal situation, before private investment in Sri Lanka's road sector will become a reality. Having said this, the Government is again actively seeking to promote this project as a BOT project, but now with some government support.

5. The Problems

The private sector perceive the following problems which need to be overcome before significant private sector investment will occur in the road sector in the Indian Sub-Continent:

- Lack of institutional capacity and experience in project finance.
- Limited consumer affordability and low traffic densities.
- Unclear tariff policies and absence of regulatory framework.
- Lack of transparency and competition in procurement.
- Political instability, civil unrest, labor union power.

C. Indonesia

1. Development of Toll Roads

Between 1978 and 1990, Government financed all toll roads. The state toll road agency Jasa Marga initially operated them, but later took responsibility for financing and construction. The 46 km Jagorawi toll road south of Jakarta was the first such toll road, and Jasa Marga was responsible for toll collection and maintenance. The finance for toll roads was sourced through foreign loans repaid by the Ministry of Finance, and low-interest bonds sold to employee pension funds.

After 1990, the Government granted a license to Jasa Marga to develop, construct, and operate toll roads in cooperation with the private sector. Presidential Decree 25/1 987 required that Jasa Marga be involved in all toll road construction. Private entities were required to set up joint ventures with Jasa Marga, who were therefore both investor and regulator.

There are two forms of private sector arrangement:

- **Build-Transfer-Operate.** A cooperation agreement is signed with Jasa Marga, and the road is handed over to Jasa Marga once constructed. The private investor receives a share of the toll revenues over the concession period.
- **Modified turnkey.** Investors fund, design, and construct the toll road. Jasa Marga then operates the road and the investor receives an agreed share of revenues, with no involvement in the operations.

Since 1994, foreign investors can work with Indonesian companies in promoting projects. They are required to cooperate with Jasa Marga through a domestic joint venture.

Indonesia's Sixth National Development Plan provided for the construction of 688 kms of toll roads by 1999, and 1935 kms by 2020. By mid-1997, 15 projects and 472 kms had been constructed, of which 150 kms had been constructed and were being operated by private sector concessionaires.

2. Key Issues

There have been many problems to date, as follows:

- **Uncertainty about tariff adjustments.** This has required the approval of the President to every such change, undermining confidence in the revenue stream.
- **Transparency in procurement.** Concessions have usually been granted to well-connected parties, and not as the result of competitive bidding. This has distorted the objectives of PSP.
- **Land acquisition.** This has been problematic and a major problem. Responsibility for the cost is with Government, yet they have sometimes tried to transfer this to the private sector.
- **The road planning framework has sometimes been weak,** and there has not been confidence that the projects identified for implementation are the key priorities.

- The domestic capital markets for private capital have been small, leaving the government banks and pension funds as the only sources of domestic capital.
- Privatization of Jasa Marga. Prior to the crisis, it was the government's intention to raise substantial funds from this. It is now recognized this will not be possible and the role and capitalization of Jasa Marga are under consideration.

3. The Economic Crisis and Government Response

The economic crisis hit Indonesia hard, resulting in a major currency realignment, increased domestic interest rates, increased petrol prices, lower traffic levels, and lower expectations of future traffic. This has created major problems for existing projects, and the collapse of the domestic banking sector has stopped all ongoing toll road projects.

The Government has taken steps to restructure the toll road program in the light of these events. All projects have been reviewed, and been prioritized.

These changes, together with political changes, have led government to reappraise and realign its policy for PSP in the light of the new imperatives. Presidential Decree 7/1998 provided a major change to the procurement of toll roads. This:

- Mandated the issue of open competitive bidding for all infrastructure projects.
- Required such projects to come from a 'List of Infrastructure Development projects' that had been subject to initial screening on their bankability and planning aspects.
- Mandated that all unsolicited bids would be subject to competitive bidding. Work to implement these provisions has proceeded.

As noted above, all toll roads have been reviewed and prioritized, and the future of Jasa Marga is under consideration.

D. Latin America

Latin America has many examples of PSP in the roads sector, and three countries have been selected as of direct relevance to this technical assistance:

- Argentina, which has innovated extensively
- Mexico, which has implemented a vast BOT program of expressways - with many lessons.
- Colombia, where the government has a system of public tolled roads as well as a road concessioning program. The concessioning program has had regional economic development as one of its objectives.

1. Argentina

There are three different approaches to private sector investment in roads in Argentina:

- Concessions - for rehabilitation, operation and maintenance of 9,000 kms of the main road network with traffic volumes of at least 2,500vpd.
- Construct, operate, and maintain for a relatively small network of non-tolled national roads, in good condition. This approach is still under development.
- Contrato de Recuperación y Mantenimiento (CREMA) for rehabilitation and maintenance of 14,400 kms of the national road network. Most of the roads in this program required some initial rehabilitation work.

The Government introduced these private sector initiatives because of a crisis in road management by the end of the 1980s when under-funding over many years had left Argentina with the worst maintained network among all upper middle income countries. Thirty percent of the paved roads were in poor condition in 1989.

In 1989, the Highway Reconversion decree anticipated private sector involvement in highway matters and this was followed by the State Reform Law which provided for Dirección Nacional de Vialidad (DNV) to repair and maintain the national arterial road network through partial or total concessions. Since then, the mechanisms by which the private sector is involved, have evolved.

a. Concessions

The first mechanism for private sector involvement was to concession approximately 9,000 km of the main road network. The call for bids, in 1989, specified that:

- Concessions would run for 12 years.
- There was a fixed toll structure. There was a uniform rate per kilometer for each class of vehicle and tolls were then applied on the basis of size of vehicle, number of axles and distance from last toll plaza. There was also some inflation protection for concessionaires, through a formula involving Consumer Price Index (CPI), Wholesale Price Index and the US dollar value.

- A list of initial rehabilitation works, which had to be completed before tolls could be collected, was specified.
- A list of priority works, which had to be completed before 3 years of the concession had elapsed, was specified.
- A list of improvement works, which were necessary to keep the road at the quality required for the 12 years of the concession, was specified.
- No Government guarantees for the project were given.
- The concessionaire was required to form a corporation or joint venture for the sole purpose of administering the concession.
- Income above expected levels would be used to improve the level of service provided on the roads.
- The concessionaire must control excess loads at weighing stations and were authorized to collect compensation from such loads.
- The concessionaire was required to take legal responsibility for any accidents occurring because of a poorly maintained road.

However, it did not specify how the corridors must be packaged, leaving bidders free to bid for groups of corridors.

All 147 bids were assessed in terms of the appropriateness of their traffic studies and on the economic and financial plans which they involved. A weighted formula was used to consider the following elements for all bids:

- Total expenditure on:
 - initial works
 - priority works
 - investment in improvement works
 - investment in any additional works
- Proposed routine maintenance work.
- Proposed toll collection system and facilities.
- The 'canon' to the state - which was the key criterion. In Latin America, the term canon is widely used to refer to payments from private sector to Government for the right to provide, and charge for the provision of, a service.

Concessions were awarded in 1990. The road segments all had at least 2000-2500 vpd. The total canon to be collected by the Government was US\$890 million (in 1990 dollars).

A control entity was established to manage the concessions on behalf of the DNV. It ensures that the concessionaires comply with their technical obligations and deals with relations with road users. However, it relies on the concessionaires for all the traffic and toll revenue information.

Problems with the concessions approach were, however, already evident by early 1991:

- The convertibility law in February 1991 set the Argentinean dollar to parity with the American dollar thereby doubling the relative price of the toll for local users (to around \$3 per 100km). This pegging also made the tariff escalation clauses illegal.
- The concessionaires were collecting tolls without having undertaken the initial works.
- Tollbooths were located to capture traffic in suburban areas which was generating significant popular opposition to the program.

The DNV suspended contracts and re-negotiated the concession agreements. The renegotiation led to the following changes:

- Reduction of tolls by 50 percent.
- Elimination of the canon payments.
- Introduction of government subsidies of around US\$57 million per annum (allocated between concessionaires on the basis of their value added tax contributions – in effect therefore a shadow toll).
- Relocation of the tollbooths.
- Changes to the schedule of works.
- Extension of the concessions to 13 years.

Traffic on these inter-city concessions more than quadrupled between 1991 and 1996. This took toll revenues from around US\$60 million in 1991 to US\$258 million in 1996. The growth, however, flattened out because of the recession from 1995 onwards. Maintenance also improved greatly, so that only 25 percent of roads were in bad condition in 1993 and a predicted 10 percent in 1997.

The government proved reluctant to allow toll increases and hence the support payments rose from US\$23 million in 1991 to US\$65 million in 1996 (the Government has not estimated whether the private sector is maintaining roads at a lower cost than the public sector did prior to concessioning.)

Subsequently about 500km of the network has been concessioned on the access roads to major cities (starting with Buenos Aires in 1992). These concessions involve some new construction and are for longer durations - in Cordoba for example a 349 km network has been concessioned for 25 years.

The structure of the access roads concessions is similar to that described above, in particular, they require substantial investments before tolls can be levied and there are no traffic guarantees. However, the concessions were usually bid on the single criterion of the basic toll level (which is indexed on the US CPI). Concessionaires were also sometimes required to build parallel free roads, mainly to act as collector streets.

One example of these access roads was the Acceso Ezeiza Canuelas (the Ricchieri Tollway). This contract consists of improvements to the existing 16 km highway (from central

city to airport), construction of a new 31 km road, at the end of the existing road, and maintenance and operation of the full length of the road. Tolls cannot be levied until the end of the construction period (two years) and will be adjusted annually on the basis of the US CPI. The peso toll level is to be adjusted monthly to reflect changes in exchange rates.

The concession was awarded for 22 years and 8 months in 1993 and the award criterion was the size of canon that the concessionaire would pay the Government. The Government and concessionaire worked together to identify the alignment which represented a balance of economic and socio-economic objectives. The concessionaire is required, under the contract, to build another lane if the traffic level grows above a certain threshold.

Though very innovative, the concession was undermined when the largest of the six companies in the consortium went into receivership in March 1996 and the project has therefore been put on hold.

Some of the new construction for these concessions has required land acquisition and population resettlement. This has been managed by the relevant provincial government with assistance from municipalities as necessary. The risks associated with this were, however, assigned to the concessionaires and this did lead to significant delay on two of the concessions (such that by 1997 construction was still delayed).

In 1995, the Government issued rules on concession re-negotiating. All negotiations in 1991 had been on a bilateral basis, with each party looking to maximize its gains. There were no rules to specify what could and what could not be changed. The new rules however determine all options and terms of eligibility so that each concessionaire is dealt with on the same basis. In December 1996 the regulation of concessions for road and rail was handed to a new agency reporting to the Secretary for Public Works and Transport.

Typically the concession companies are joint ventures of Argentinean and International construction companies.

The IFC has lent to two toll road projects in Argentina:

- REC Toll Highway - approved in 1995. The project is \$161 million with an International Finance Corporation (IFC) loan of \$20 million.
- Western Access Road - approved in 1996. The project is \$272 million with an IFC loan of \$35 million.

The Inter-American Development Bank is currently preparing a loan to support the Cordoba access roads project through the 2 year construction phase before tolls can be levied.

b. COT (Construct-Operate-Maintain)

The construct, operate, and maintain network includes 1,879 km of national roads to be concessioned under a non-tolled arrangement. The government will allocate US\$36 million per year for the up-keep of these roads. Arrangements for this form of concession are still being developed in 1998.

c. CREMA (Rehabilitate and Maintain)

The contracts under CREMA are fixed price rehabilitate and maintain contracts for five years. Bidding is highly specified in terms of defining the minimum level of service and contracts are awarded to the lowest bidder.

The CREMA system operates on a performance, or output, rather than on payment for the quantity of work done. The minimum level of rehabilitation is specified by DNV and must be carried out within the first year of the contract (following detailed engineering design). Maintenance requirements are specified and are regularly inspected (though inspection team size is minimized through the output specification). The requirements are categorized in the following way - potholes, cracking, rutting on pavement, condition of shoulders, culverts, drains, bridges, roadside, environment, horizontal and vertical signs. Penalties for non compliance on each item are established. The contracts are specified in this manner in part to ensure that the concessionaire has an incentive to rehabilitate efficiently since he will then be required to maintain the road for the full five year concession period.

The program covers around 14,400 km (in 100-300 km networks). 11,818km were let during 1997 in 61 separate contracts, at about \$1 1,000 per km/year. Rehabilitation is expected to account for approximately 75 percent of the total cost. Between 5 and 20 proposals were received for each package.

2. Mexico

The Mexican Government awarded 53 concessions for 5,500 km between 1989 and 1994, thereby doubling the national toll road network. By the first quarter of 1995, 44 of these were in full or partial operation (5,120km).

The Secretary of Communications and Transport was responsible for the concessioning program. Concessions were let under the General Means of Communication law. The concessions were not to exceed 15 years (later extended to 30 years) and a parallel free alternative to the highway was required. Other state level road concessions were also awarded. These tended to be modeled after the federal arrangements.

Special purpose entities for the toll road projects were required, and these were typically consortia of local construction firms (though they were not always special purpose entities in practice). The call for bids defined the project in terms of:

- Alignment.
- Location of interchanges and tollbooths.
- Number of lanes.
- Design and construction standards.

The Government supplied bidders with traffic and cost projections and basic designs. Bidders were assessed on many criteria but were favored if they promised to transfer roads back to the Government in a short period. This was partly because of the concern that only short-term financing would be available, but also because the administration was looking for 'success' within its period of office.

The concession agreement specified the tolls to be charged, by category of vehicle, which were to increase semi-annually in accordance with the consumer price index

(or whenever the CPI rose by 5 percent or more following the previous adjustment). Most toll changes had to receive written approval from the government. Traffic levels were guaranteed by category of vehicle. Where the actual volumes fell short of the guaranteed levels, concessionaires were entitled to request an extension to the concession to recover their investment.

As the concessions were initially set for very short periods (as short as three years in one case) the concessionaires negotiated very high toll rates. Given these high tolls, forecast traffic did not materialize and concession periods were extended.

Other problems included:

- Substantial construction cost overruns (for example, on the 267 km road from Cuernavaca to Acapulco the cost over runs were around 200 percent and the time delays about 30 months.). In some cases, this was because the concessionaires provided “sweat equity”. Originally this accounted for around 20 percent of the investment costs but as lenders demanded higher equity cushions so the construction budgets rose.
- Failure to concession a cohesive network so that long distance traffic was not attracted to the new roads.
- Under-staffing at the Ministry of Communications and Transport which led to long permit approval times and inadequate enforcement of the requirements of the concession (for example, bidders were required to post construction bonds but these were either not lodged or not effective)
- A weak pre-qualification process which did not ensure that concessionaires had the technical capacity to plan and design the road. For example, some traffic projections were that trucks would account for between 20 and 45 percent of the traffic. In fact, trucks turned out to account for only about 5 percent. Anecdotal evidence suggests that there was a black market in toll receipts which allowed truckers to use the free alternate routes while pocketing the toll charges.)
- Weak scrutiny from lending banks. Large amounts of non-recourse financing were provided by government-owned commercial banks without undertaking their normal project screening or appraisals. Anecdotal evidence suggests that this was because banks understood that all projects would be supported by government even if they proved commercial failures. Even had the Banks been undertaking such due diligence, their negotiating position was weak since they were not allowed a collateral assignment of the concession agreement (i.e., they had no right to take over the infrastructure if the sponsor firm collapsed)
- Right-of-way acquisition was not completed before the construction began. Since opposition to the projects grew and acquisition became more problematic, construction costs rose as machinery stood idle and interest costs increased.
- Government reacted to local pressures by specifying change orders unilaterally.
- Concessionaires did not avail themselves of the right to develop ancillary services (a right which extended for two years past the end of the concession) and paid little heed to the need to provide good access roads.

- There tended to be very few bidders for each project (few international investors were attracted, in part because of their unfamiliarity with the Mexican legal system which governed the concessions — there was no recourse to international arbitration)

The December 1994 currency crisis in Mexico brought matters to a head, since traffic levels dropped off steeply. By March 1995, only 5 of 32 projects which were operating could meet their base case revenue projections. On average, actual project revenues were 30 percent below original projections. The companies were not marketing the time and distance savings that the roads could provide, but even with this the very high tolls would have been significant disincentives.

By early 1997 the World Bank's Operations Evaluation Department estimated that nearly 40 projects (with \$1 1.5 billion in equity and debt investments) had submitted requests to the Government for financial restructuring. In August 1997 the Government of Mexico announced a restructuring package of around (US\$8.9 billion for 23 projects). The government also planned to reduce tolls for cars and trucks by 15 percent and 35 percent, respectively.

Despite all of these difficulties, three projects did successfully refinance before the 1994 crisis. The IFC was involved in the refinancing of the Toluca toll road in June 1992. Generally despite high interest rates, the deal was not well received because of the tight debt service coverage ratios and the currency risk. The two other projects to be re-financed were the Ecatepec-Pirámides and Manzanillo Armeria roads and the Mexico City-Cuernavaca road.

3. Colombia

There have been publicly-owned tolled roads in Colombia for many years. In 1993 two laws were passed which now permit transport concessions. The Government has subsequently developed a three-tier system of concessioned roads:

- Expansion of existing roads.
- New construction.
- Road maintenance.

One particular objective of the program is to develop roads in those areas where economic development requires further development of the road network. The Government developed a standard basic contract, which has been adapted for each of the tiers.

One of the criteria on which concessionaires are selected is the lowest proposed tariff. The concessionaires, in theory, estimate the level of toll that they would require to cover the investment costs to achieve a "rate of return equivalent to that which would be achieved from another project facing similar risks". If these tolls are deemed politically unacceptable, then the bidders must consider altering construction plans, the design of the construction, or requesting government investment.

The Bogota to Villavicencio Road concession was signed in 1994. This consists of repairs to 13.5 km of road, construction of 34 km (including two tunnels), construction of two underpasses, rehabilitation of 7.5 km and various auxiliary works. The Government agreed to rehabilitate another 55 km section of road and to build a new tunnel. The contract for all the work was divided into three stages — design and programming, construction, and operation. Each stage is of fixed duration and the contract ends at the end of the operating stage (16 years from the start of the project) when the road reverts to Government at no charge.

There are several interesting aspects to the agreement:

- Land acquisition - the National Roads Institute acquires the land for the concessionaire, though this is paid for by the concessionaire. The cost of the land is specified in the concession agreement, and the national roads fund is required to compensate the concessionaire if the total cost rises above the agreed level.
- Treatment of revenues - the tolls charged from the start of the operating period will rise with CPI, but only if the index moves 20 percent from the last adjustment, or once a year. Though this is established in the concession agreement, the National Roads Institute may refuse to grant permission, but must then compensate the concessionaire. Minimum and maximum revenue streams for the concessionaire are also specified in the concession agreement (on the basis of traffic levels by vehicle type). Where toll revenues are less than the minimum in any given year, the national roads institute compensates the concessionaire for the difference. Where the toll revenues are greater than the maximum, then the concessionaire places 50 percent of the excess in a special account and the rest will be used to pay for additional maintenance costs. The funds in the account will be used by the National Roads Institute to pay the concessionaire when revenues fall below the minimum, or to fund additional works.
- Dealing with environmental permission processes - If this process is delayed, but the concessionaire is not at fault, the concession is suspended until the end of the delay. Where this seriously affects the economic position of the concessionaire, there are compensation mechanisms in the concession agreement.

Despite all these arrangements, there have been difficulties. Detailed engineering was completed within the specified period, but determined that the project cost would be far greater than first thought. This led to renegotiation of the concession agreement. The Government too has faced difficulties (cost overruns and delays) in undertaking its construction obligations.

E. Eastern Europe

1. Overview

The ambition to involve the private sector in funding the development of the road network in the former Eastern Europe has not so far been fulfilled in practice. Table A2.2 identifies the road sector projects submitted to the European Bank for Reconstruction and Development (EBRD) for their consideration and their current status. Of the eleven projects submitted, only two, both in Hungary, have been implemented with private finance.

There are a number of reasons why most private sector transport infrastructure projects have not reached fruition. EBRD cite the most important as:

- Poor financial viability, particularly for motorway projects - projects may be economically attractive but not financially viable without a contribution from the public authorities. In the case of motorways, EBRD's experience is that upgrading roads to full motorway standards is likely to be economically and commercially viable for very few (if any) sections, in the short to medium term, if rigorous evaluations are conducted. Despite initial hopes and aspirations, present income and traffic levels in the region are usually too low to generate sufficient toll revenue to service the debt of a fully privately-financed facility.
- Public affordability and political acceptability - political factors have been behind the lack of progress of some concession projects in the region:
 - It may not always be acceptable that transport infrastructure is provided by the private sector, usually involving foreign interests.
 - Proposed toll levels may be out of reach of local motorists traveling for their own purposes, rather than on corporate or other business, which will recompense toll payments. This can preclude political acceptability.
 - Governments may be reluctant to lose control of a strategic asset.
 - Bureaucrats may be reluctant to see the private sector take control of an asset on which they should continue to be employed.
- Level and equitable allocation of risks - lenders may not be willing to take full traffic risk arguing that it is properly an equity risk. They may therefore require support from the state, in the form of:
 - Guarantees of a base level of traffic or revenue (Spain).
 - Provision of cash-flow deficiency guarantees (Hungary).
 - Linking the concession period to the outturn traffic volumes (Dartford Crossing and Second Severn Crossing, United Kingdom (UK)).

Table A2.2: Road Projects Submitted to EBRD for Consideration

COUNTRY	PROJECT	COMMENT
Croatia	M12 Zagreb-Gorican	Discussions under way with government's preferred tenderer Subject to review
Czech Republic	Zagreb-Karlovac-Rijeka D5 Motorway	Concession tender canceled and project completed by the State
Hungary	M1-M15 Toll Motorway	private financing using BOT structure; M1 opened to traffic in January ; 1996; outturn traffic about 40 per cent lower than forecast
	Szekszard Bridge	Concession awarded, but project never reached financial closing, due to poor financial viability
	M5 Toll Motorway	private financing using BOT structure; first section opened to traffic December 1996
	M3 Toll Motorway	having tendered the project as a BOT concession, the government decided in September 1995 to cancel the tender and build the motorway as a state sector project
	M7 Toll Motorway	Concession tenders submitted; government reviewing options
Poland	A-2 Motorway Concession	two concession tenders submitted
	A-4 Motorway Operating Concession	Preferred tenderer selected by government
Romania	Initial motorway concession	Concession advertised July 1996

EBRD's past experience with the M1/M15 Motorway in Hungary (see Case Study below) may lead it to require project sponsors or the host state to bear traffic risk. Where substantial public support is required to a privately-funded scheme, conflicts can arise, reflected in legal arrangements and risk premiums and adverse effects on project development and implementation.

- Lack of equity - returns to shareholders in early years can be limited by long construction periods, debt service obligations, and slow traffic/revenue build-up. For the M5 Motorway in Hungary, first dividend payments are permitted only 10 years after financial closing. Thus, only those with a construction interest are likely to invest, which leads to conflicts of interest difficult to control. Competing investment opportunities are likely to be more attractive.
- Lack of local funding - for projects that generate mainly local revenues, part of the debt has to be denominated in local currency to limit exposure to currency devaluation and inflation risks. Local financial and capital markets in the region are generally insufficiently developed for this type of funding. EBRD supported local funding instruments for the M1/M15 Motorway in Hungary such that 50 percent of the debt is denominated in local currency. Otherwise the host-state might guarantee a fixed exchange rate (as in Spain).
- Regulatory and legal constraints - ideally there will be a concession law in place. In the absence of such a law, lenders will require various security arrangements, the absence of which will reduce their willingness to participate.

- Lack of convincing examples from Western Europe - most of the Central European countries look to Western Europe for examples of privately financed infrastructure. Unfortunately, there are few examples and success has been mixed.

EBRD now believes there are likely to be few (if any) financially viable motorway concessions in the region in the next five years or so, without substantial public sector financial support. EBRD will continue to aim to mobilize private finance for transport infrastructure through concessions and public/private partnerships. But it expects opportunities to be limited and to focus more on co-financing operating assets and transport services, leaving infrastructure financing to, say, the World Bank and European Investment Bank which have mandates for sovereign lending.

2. Case Studies

Case studies of the two motorway projects in Eastern Europe which have been implemented using private funding, both in Hungary, are presented below, together with the current situation in Poland as another case study. The conclusions from these case studies and the experience generally in Eastern Europe are set out below.

3. Conclusions

The three case study examples presented below provide common themes which illustrate the problems associated with involving the private sector in developing the region's motorway network:

- Governments had, and may still have, ambitious plans for the development of comprehensive motorway networks utilizing private finance.
- Current levels of income (gross domestic product (GDP)/capita is currently estimated at US\$6,500-US\$7,500 in both Poland and Hungary) and vehicle ownership/usage generate toll motorway daily traffic flows in the range of 7,000-10,000.
- Initial traffic forecasts in support of concession bids have often been substantially higher.
- The construction of motorways in Eastern Europe is not significantly cheaper than in Western Europe where vehicle ownership and incomes, and therefore the ability and willingness to pay tolls, are higher.
- It follows that the private sector cannot bear all of the traffic/revenue risks. Substantial government contributions, of up to 50 percent of project costs, are required to make projects bankable.
- Lenders will be increasingly reluctant to participate in such projects without independent traffic forecasts on which to base financing decisions and government contribution to a public/private partnership.
- The EBRD foresees few, if any, privately-funded motorway projects proceeding in the former Eastern Europe in the next few years.

CASE STUDY: M1/M15 MOTORWAY, HUNGARY

The Project

- 43 km of dual 2-lane motorway linking an existing, untolled 126 km of motorway in Hungary with 60 km in Austria, to complete Budapest-Vienna link (M1).
- 14 km spur towards Bratislava (M15), one carriageway to be completed by December 1997, the second by December 2002.
- M1 opened at the beginning of 1996 as the first tolled motorway in the former Eastern Europe.

Implementation Process

- Long term motorway development plan approved by Hungarian Government in 1991. M1/M15 identified as suitable for limited recourse project financing.
- 5 consortia shortlisted in 1992, 4 bids submitted.
- 2 preferred tenderers selected in Nov 92, winner selected in Feb 93.
- Contract signed in April 93, financial closing in December 93.

Government Contribution

- Preliminary design, building permits, environmental clearance.
- Land (about 5 percent of project cost).
- Undertaking of no tolls on existing 126 km of motorway prior to 2005.
- Acceptance of phased approach, eg, M15 second carriageway.
- Some restrictions of HGV movements on parallel road.

Concession Terms

- Total project cost was ECU 329 million (US\$325 million): construction costs = 67 percent, concession company's costs = 18 percent, capitalized interest = 15 percent.
- Concession terms required equity to be at least 20 percent of project cost.
- All commercial, operational and financial risks borne by concessionaire and debt providers. No state guarantee for traffic or cash-flow levels.
- 15 percent of profits to be paid to Government's Road Fund.

Outturn

- Observed traffic volumes of around 7,000 vpd, one third below forecasts.
- Very little use of M1 by trucks.

- Initial tolls set at Forint 900 (=US\$6.5 or US\$0.15/km) for cars and 3 times that for HGV. High tolls by international standards.
- High Tolls challenged in Hungarian courts. Challenge upheld on the grounds that the tolls are too high relative to the value of the services rendered.
- Tolls unchanged, but Forint 350 out of 900 to be repaid to those who take the concession company to court.
- Possibility of M1 project having to be re-financed - it is technically bankrupt.

Reasons for Poor Outturn

- Project design. Short tolled section of motorway between two untolled sections can easily be avoided.
- Traffic modelling errors.
- Over-optimistic forecasts - of Hungarian income growth, Austrian export traffic, Western tourism traffic.
- Adverse response of truck and coach operators to tolls and to concession company.
- Rigid pricing policy, unsuccessful marketing, poor image of concession company.

Lessons Learned

- Allocation of all traffic linked commercial risks to private sector a major error.
- Substantial government contribution (of up to 50 percent of project costs) required to make toll motorway projects bankable in emerging countries in Eastern Europe.

CASE STUDY: *M5 MOTORWAY, HUNGARY*

The Project

- Phase 1: Upgrading and tolling existing 26 km dual 2 lane motorway. Building second carriageway for 30 km 'half motorway'. 40 km of new dual 2 lane motorway.
- Phases 2+3: Building 60 km of new dual 2 lane motorway.
- Phase 1 sub-divided, opened in stages between January 1997 and summer 1998.

Implementation Process

- Followed M1/M15.
- Invitation to pre-qualify issued in April 1992. 3 responses, all shortlisted.
- 2 bids submitted in June 1993, preferred tenderer selected in Feb 94.

Government Contribution

- Preliminary design, building permits, environmental clearance.
- Land.
- Existing 26 km of motorway and 30 km of half motorway.
- Acceptance of phased approach, allowing deferred construction of Phases 2 and 3.
- Two new feeder roads to motorway.
- Standby operational support for period 1998-2004 - a cash flow deficiency guarantee. This became necessary following discouraging traffic forecasts from an independent traffic study commissioned by the lenders.
- Some restrictions of HGV movements on parallel road.

Concession Terms

- 35 year concession period.
- Total project cost was ECU 370 million (US\$440 million): construction costs = 68 percent, concession company's costs = 13 percent, capitalized inherent = 19 percent.
- Investors' equity = 26 percent of construction cost.
- 29 percent of profits paid into Government's Road Fund.

Outturn

- Observed traffic volume through main toll plaza of around 7,600 vpd in first year, 85 percent of forecast.
- Concessionaire's financial position secured by decreasing interest rates, active marketing policy, operating cost savings and standby facility.
- Public and political concern at diversion of traffic, particularly HGVs, from former untolled motorway to parallel road through local settlements.
- Government discussing discounted toll schemes with concessionaire to encourage more use of M5 and protect local settlements.
- Tolls, lower than M1 tolls, accepted by courts as reasonable.
- Concessionaire and lenders considering Phases 2 and 3.

Lessons Learned

- Government contribution and direct financial support required in former Eastern Europe to make public/private partnership motorway projects work.
- Partial traffic or revenue guarantees might be needed to provide comfort to private investors and lenders.

- Value of independent traffic/revenue forecasts, guided by potential lenders, which led to re-phasing of project, restructuring of project finances, and provision of standby facility.

CASE STUDY: *POLAND*

Government Ambitio

- 2,600 km of toll motorway financed, constructed and operated by private sector.
- Total cost of US\$8 billion-US\$15 billion.

Agreements

- Concession signed with Autostrada Wielkopolska for A2 east-west motorway between Polish/German border and Łódź in Central Poland.
- Concession agreement expected with Gdansk Transport Company for northern part of A1 north-south motorway.
- 30 year right to tolls collected in return for building roads with private finance.
- Government role limited to land acquisition and providing credit guarantees for up to half of total cost.

Current Problems

- Independent traffic forecasts indicate 7,000-9,000 vpd using a toll motorway, compared with previous forecasts, undertaken for concessionaires, of 12,000-15,000.
- Exclusive use of private sector funding not compatible with new traffic/revenue forecasts.

Ways Forward

- Either, Government financial support in public/private partnership, with income from a special fund financed from road tax and excise receipts or from future aid,
- Or, concessions withdrawn/abandoned.
- Motorway development program uncertain.

F. United Kingdom

The UK's motorway network was developed largely in the 1960s and 1970s with few exceptions as an untolled, publicly-financed motorway network. While parts of Continental Europe, notably France, Italy and Spain, were developing tolled motorway networks employing private sector funding, tolls were considered and not pursued in the UK for the following principal reasons:

- The density of development in the UK and the density of the road network led to concerns that the imposition of tolls would divert substantial numbers of trips from motorways to parallel roads, giving a reduction in efficiency and leaving the motorways underused.
- The density of the road network and hence the large number of intersections on the motorway network would have led to high toll collection costs.

There, exceptions to the general rule of an untolled motorway network are, estuarial crossings, the Birmingham Northern Relief Road, and, of greatest interest, the recent DBFO Road program.

Estuarial Crossings

Major estuarial crossings were tolled on the grounds that they were expensive pieces of infrastructure to build and they provided users with substantial savings through the avoidance of long, circuitous journeys via the nearest upstream crossing. By the late 1980s, there were 11 tolled estuarial crossings, funded by the public sector through grant and loans. The total debt in the early 1980s exceeded £400 million and annual interest payments were not being covered by net revenues. Interest was being capitalized and was unlikely to be fully paid.

Second Dartford Crossing. The private sector became involved in the funding of the road network when the Dartford River Crossing Ltd. (with Trafalgar House, now Kvaerner, as a major partner) funded, almost exclusively through debt not equity, and built the Queen Elizabeth II Bridge at Dartford. Dartford River Crossing's concession allowed them to collect the toll revenues from the existing tunnels and the new bridge for a period up to the full repayment of the debt. The new bridge opened in October 1991 and the debt is expected to be repaid in the year 2000. At that point, under the legislation now in place, the crossings will revert to the public sector, tolls will continue for a year to develop a fund for maintenance, then tolls will be withdrawn.

Second Severn Crossing. This is conceptually similar to the Second Dartford Crossing. Severn River Crossing Ltd has bought the concession to operate the existing bridge and toll both bridges for a period of 30 years.

Other than these estuarial crossings, the only attempt at a tolled section of motorway in the UK to date has been the Birmingham Northern Relief Road.

Birmingham Northern Relief Road

The Birmingham Northern Relief Road was planned in the 1980s as a relief road for one of the more congested sections of the UK's motorway network in the conurbation of Birmingham, which has a population of around 2 million. The proposed Birmingham Northern Relief Road was around 40 km long, it was considered at Public Inquiry in 1988 and was intended to be the first

road in the UK subject to a competition for private sector design, construction, finance and operation.

Following pre-qualification, three groups were invited to submit bids for the concession by October 1990. In August 1991 a Memorandum of Understanding was signed with the successful bidder, Midland Expressway Ltd (MEL).

MEL reviewed the alignment and junction arrangements of the preferred route from the 1988 Inquiry and proposed changes. Consultation on these changes with local authorities, government departments and the public was required to satisfy the government that the proposals could pass through the statutory planning process. Some substantial changes were made to the proposals as a result of the consultation process. The new preferred scheme was then resubmitted to the planning process in 1992. 6 years later it is still subject to appeal.

It is reminiscent of Catch 22. Innovative ideas are required from the private sector. If these affect scheme designs, requiring a change in published orders or new orders, schemes have to go back through the planning process. But it is the public sector that is best equipped to take schemes through the planning process, and the private sector would prefer not to get involved until all such procedures are completed. How then can a private sector contribution to scheme design be obtained?

Design-Build-Finance-Operate (DBFO) Schemes

The DBFO process was announced in December 1993, and the first four contracts were let in 1996. Now eight contracts have been let, in two tranches, and some £1 billion of finance raised. Under these contracts, private sector concessionaires build, operate and maintain sections of trunk roads or motorways over 30 years. In return, the concessionaires are paid by the government according to the number of vehicle kilometers driven on the road. Road users will not pay directly for using the road. This payment mechanism has come to be described as 'shadow tolls'.

1. Objectives

The intentions of the government, represented by the Highways Agency (HA), in letting the contracts, were:

- New roads to be designed and constructed, and the new and existing roads to be maintained and operated safely and satisfactorily so as to minimize any adverse impact on the environment.
- Test the enthusiasm of the market for such contracts across a range of scheme types.
- Assist in the establishment of a road operating industry within the private sector.
- Promote innovation.
- Maximize value for money through the use of a competitive process and by allocating risks between the public and private sectors in the most appropriate manner.

In the remainder of this section we comment on:

- The shadow toll payment mechanism.

- The variety of projects being implemented under DBFO.
- The risks, particularly traffic risk, borne by the concessionaire.
- The DBFO bidding process, which has been thoroughly audited and praised by the National Audit Office.
- The use of public sector comparators in that process.
- Whether the intentions of establishing a road operating industry and promoting innovation are being realized.

2. Shadow Toll Payment Mechanism

The shadow toll payments are made by the government to the concessionaire on the basis of the vehicle kilometers traveled on the defined section of road by vehicles in two categories - heavy goods vehicles and other vehicles. Bidders had to put forward their required payment per vehicle km:

- By the two vehicle categories.
- In each of four bands (payment for the first x million vehicle km, the next y million, etc).
- With a zero payment specified for band 4, i.e., vehicle km in excess of the upper bound of band 3 which was specified by the bidder.

A key evaluation criterion was the HA's estimation of the required payments to each bidder using the HA's traffic forecasts and each bidder's proposed payments schedule.

a. Variety of DBFO Projects

The initial DBFO projects have varied in their size and in their nature, in the balance between initial construction and on-going maintenance. For the first four schemes, the present values of expected payments range from £62 million-£232 million (US\$100 million-US\$372 million): the length of new road construction varies from 3 km to 52 km. The initial four schemes were all inter-urban schemes. As experience of the DBFO process is gained, consideration is being given to DBFO projects in urban or pen-urban areas and to DBFO projects which have no new construction but consist solely of maintain-finance-operate contracts.

b. Risk Transfer

Traffic risk was largely passed to the selected bidder. The zero payment for traffic in excess of defined volumes limited the government's exposure. But the nature of shadow tolls and the DBFO schemes limits the traffic risk to the concessionaire:

- There are no user tolls or payments, which removes a major component of the traffic/revenue risk for a conventional tolled expressway.
- DBFO schemes to date have more often been the on-line improvement of an existing section of the trunk road/motorway network than the development of new routes, which reduces the modelling/forecasting risk.

- Nevertheless, the payment to the concessionaire is related to the traffic volume, which contributed to the DBFO projects satisfying the UK Treasury and European Union rules on the transfer of risk to the private sector as a necessary PFI condition.

For the initial DBFO projects, the public sector bore the planning risk, since all the projects had been taken through statutory planning stages as public sector projects. The following risks were shared between the public and private sectors:

- Traffic risk. As discussed, the private sector bears the downside risk and the public sector bears the capped upside risk.
- Protester action. On some projects it is borne by the concessionaire, on others it is shared.
- Force Majeure. Most force majeure risks lie with the public sector, but equity holders are not compensated if termination occurs as a result of a force majeure event.

The concessionaire bears the following risks:

- Design and construction.
- Latent/inherent defects which arise during 30 year concession period.
- Delivery/timing, unless due to government-required changes, in which case compensation may be payable.
- Operation and maintenance.
- Indemnity/insurance.
- Legislative, except where the law is discriminatory against operators or DBFO roads. Concessionaires would be compensated, for example, if real tolls were introduced causing traffic volumes to fall.

c. DBFO Bidding Process

The public sector had taken the DBFO schemes through statutory planning stages. The interest of the market in the DBFO schemes was stimulated through a consultation process and market sounding exercise, conducted by the HA's professional advisors who were appointed in good time at the start of the DBFO process. The road construction industry's interest was also stimulated since it was made clear that new roads would be DBFO-funded, there would be no publicly-funded road schemes. Four bidders were invited to bid for each of the four schemes in the initial tranche; no bidder was invited for more than two schemes. A model contract was drawn up to which bidders could respond. There was a clear set of evaluation criteria, with the payment level and banding process described earlier at its heart. Best and final offers were sought from the shortlisted bidders and competitive pressure was maintained through continued negotiation with two bidders for each scheme right up to contract award. An ex-post survey revealed that bidders were broadly satisfied with the process.

On the first tranche of four schemes, the HA spent £8.3 million (US\$13.3 million) on its advisors - financial, legal and technical. The bidders estimated their costs as:

- Prequalification - up to £0.1 million (US\$ 0.16 million).
- Shortlisted Bidder - £1 million-£2 million (US\$1 .6 million-US\$3.2 million).

- Reserve or Winning Bidder - £1 million-£4 million (US\$1.6 million-US\$6.4 million)

d. Use of Public Sector Comparators

Figure A2.3 shows, for each of the first four DBFO schemes, three sets of values, all expressed as NPVs discounted at 8 percent per annum:

- Shortlisted bids. The NPV of expected payments calculated for the individual bids on each project.
- NPV of expected payments. The NPVs of expected payments to the Winning Bidders on each project, expressed as a best estimate and as a range dependent on traffic flow.
- Public sector comparators. Two estimates, one by the Highways Agency and one by its technical advisors, of the costs to the Agency of acquiring the project as a conventional public sector project.

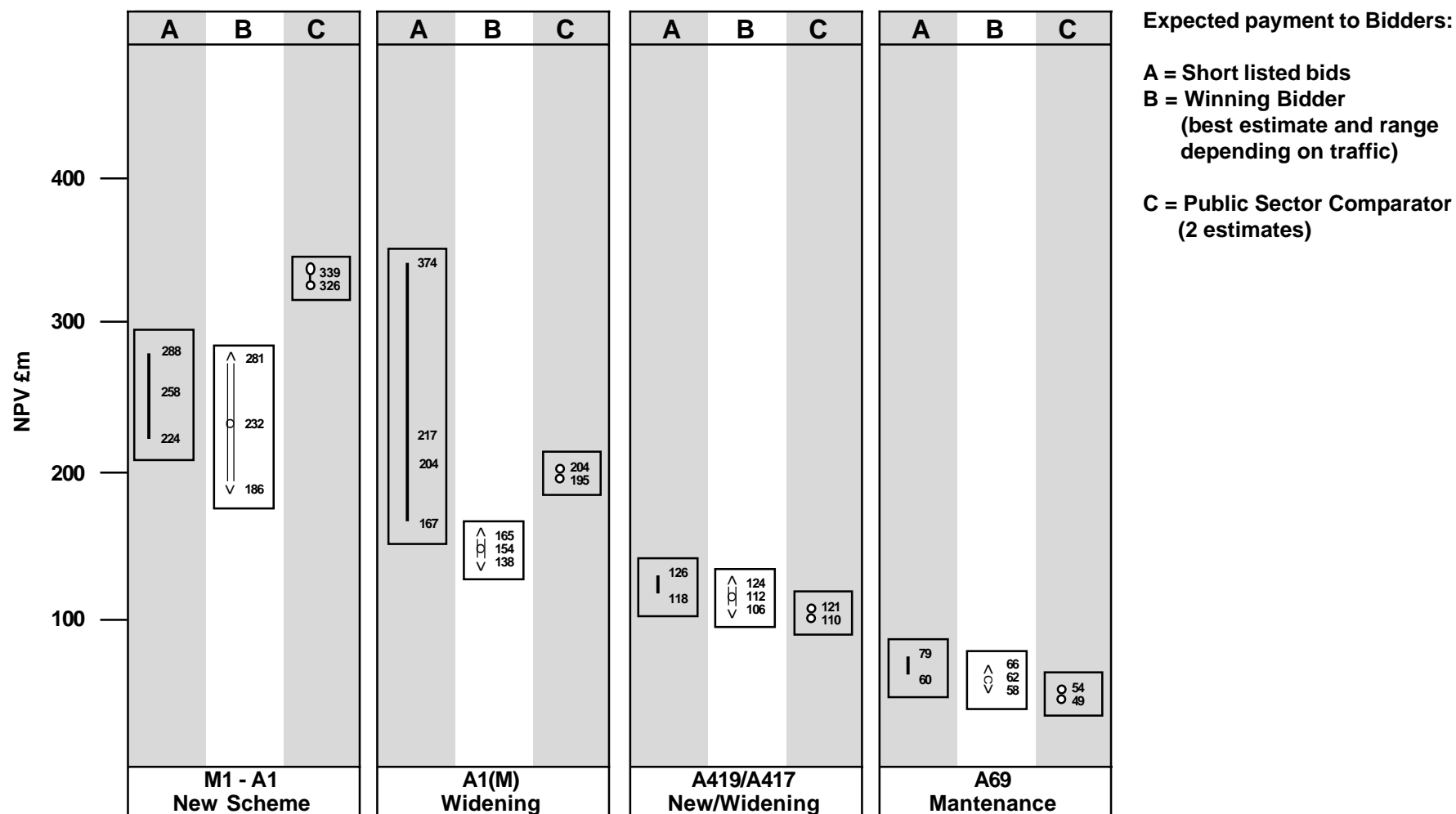
Typically, the public sector comparator has a higher value than the NPV of expected payments, leading to the conclusion that the involvement of the private sector has given value for money, producing considerable savings to the public purse. The greatest savings apparently relate to the A1-M1 project where the best estimate of expected payments (£232 million) falls substantially below the two public sector comparators (£326 million and £339 million). It is not clear why this project should apparently cost so much less than the public sector comparators, though it is believed that it has been subject to heavy 'value engineering'. There remains a concern that, despite project designs and standards being tightly specified by the public sector, and construction and maintenance closely monitored, an inferior product will be delivered that will ultimately rebound on the public sector.

e. Establishment of Road Operating Industry and Innovation

Traditionally in the UK, there have been separate organizations specializing in road construction (normally in the private sector) and maintenance (historically in the public sector but increasingly being privatized). Overlap between these two is beginning, with major contractors developing their road maintenance sections or acquiring maintenance organizations. The consideration being given to maintain-finance-operate projects will encourage this process. It is significant, however, that the initial DBFO companies, all led by construction companies, all negotiated the right to sell their equity after five years, suggesting that, as yet, the construction companies are not wholly committed to a long term involvement in road operation and maintenance.

There has, so far, been limited innovation. Project plans and the orders following public inquiries constrained designs. Non-conforming bids were made to the Agency who gave details to the other bidders, allowing them to bid on the same basis. If innovative thinking results in a change to core technical requirements, which should in any event be kept to a minimum, it is preferable for the change to be made where its cost or value is still subject to competitive pressure.

Figure A2.3: Performance of UK DBFO Projects



All NPVs calculated with 8% discount rate

G. France, Italy, Spain

There are strong similarities in the experience of these three countries which were at the forefront of the development of toll motorway networks and involving the private sector in their development. The principal similarities are:

- Each country has a substantial toll motorway network.
- The impetus in each case came in the 1950s and 1960s in response to a number of factors (reconstruction following the Second World War, response to rapidly increasing vehicle ownership and the development of infrastructure to support developing industrial and tourism activity).
- In each country both the public and the private sectors have been involved in the financing of the toll motorway network.
- The involvement of the public sector in the ownership of the motorway networks in each case had to be strengthened as private sector concessionaires experienced financial difficulty, particularly following the energy crisis in the early 1970s.
- Now the toll motorway networks in these three countries are owned in varying degrees by the public and private sectors, with considerable government financial support and profit controls on the private sector operations.

Table A2.3 summarizes the toll motorway experience in these three countries.

1. France

There is a toll motorway network of approximately 5,000 km mainly developed in the 1960s and 1970s. The first concessions were awarded in the period 1956-1963 to five Societes d'Economie Mixte (SEMs) which are commercially structured, state owned bodies, a mix of national and local government ownership. In 1969, four private sector concession companies were founded. Economic problems following the energy crisis in the early 1970s caused financial difficulties for these companies and in 1982 the government bought them, with the exception of Cofiroute, and converted them into SEMs. An 'equalization' policy was introduced, with a public entity Autoroutes de France, created to manage surpluses and deficits, and ensure balanced financial operations. Currently, Cofiroute, the one remaining concessionaire not wholly publicly owned, owns around 15 percent of the toll motorway network.

Table A2.3: Toll Motorway Experience in France, Italy, and Spain

Network Characteristics	France	Italy	Spain
Route-kms	5,000	5,000	1,900
% of Total Motorway Network	72	81	80
% Privately-owned	15 - Cofiroute	2	85
History	<ul style="list-style-type: none"> • 1956-63: Concessions to SEMs • 1969: 4 Private Sector Concession Companies • 1982: Concession Companies other than Cofiroute bought by government and converted to SEMs. Equalization policy 	<ul style="list-style-type: none"> • 1960s/70s - majority of toll network built • Autostrade S.p.A. set up to manage 45% of motorway network, but share grew as Autostrade took over loss-making roads. 	<ul style="list-style-type: none"> • mid 1960s/early 1970s Concessions let • 1983/84 state buys 3 (out of 13) concession companies
State Involvement in Financing	<ul style="list-style-type: none"> • Repayable advances • Equity (State to hold a majority of equity) • Loan guarantees 	<ul style="list-style-type: none"> • Capital subsidies • Loan guarantees 	<ul style="list-style-type: none"> • Government stipulations on funding sources • Exchange rate support • Government guarantees for foreign borrowing • Interest free loans when traffic target not met • Tax benefits to concession companies
Profit Control	<ul style="list-style-type: none"> • 7% limit on dividends • Excess profits to Autoroutes de France 	<ul style="list-style-type: none"> • Limit on dividends of 8% of share capital • Excess profits to Central Guarantee Fund 	<ul style="list-style-type: none"> • Profit limited to 10-15% of equity • Excess profits to companies' Special Reserve

The state has been heavily involved in financing the construction of the toll motorway network. Construction was financed largely by long term loans, with State support in the form of repayable advances, loan guarantees and equity (the State was to hold a majority of the equity). The SEMs in the 1960s received advances nominally repayable over a long period, to cover 30 percent - 40 percent of their construction costs and to cover unforeseen annual deficits. In the 1970s, indexed but non-interest bearing advances of around 20 percent - 25 percent of construction costs were made to public and private sector companies. State guarantees of up to 70 percent of loan financing were provided to both public and private sector companies.

The SEMs now operate under a profit control regime that allows them to distribute dividends of up to 7 percent, with excess profits being paid to Autoroutes de France for use in the equalization operation.

2. Italy

Italy has some 5,000 km of toll motorway mainly built in the late 1960s and early 1970s. By far the single largest concessionaire is Autostrade S.p.A. whose parent company is the State-controlled State Institute of Industrial Reconstruction. Autostrade was set up to manage some 45 percent of the Italian motorway network. By contrast, many of the other motorway concessions were awarded to companies which held only a single concession. Often the award was made on the basis of negotiation with a preferred bidder rather than as a result of competitive tender. Autostrade's share of the motorway network has grown as it has taken over loss making roads in return for an extension to its concession.

State involvement in the financing of motorways has included capital subsidies, variously reported as less than 10 percent of the sum invested in the period to 1986 and typically 10 percent - 30 percent of construction costs, and loan guarantees. All of Autostrade's loans are guaranteed by the State Institute of Industrial Reconstruction.

ANAS, the autonomous national highway agency, approves the financial plans and monitors the annual accounts of the toll road companies. Dividends are limited by law to 8 percent of share capital. Excess profits are paid into a Central Guarantee Fund to provide collateral for loans.

3. Spain

Spain has a toll motorway network of around 1,900 km begun in the 1960s. By 1972, concessions totaling 1,000 km had been granted. The adverse effects of the energy crisis and economic problems in the 1970s were met by the renegotiation of concession terms and by the State taking over three (out of 13) companies granted concessions.

All of the companies whose concessions were granted by the national government (9 out of the 13) enjoy special tax benefits which reduce certain taxes and duties by up to 95 percent.

The Government laid down stipulations for the financing of toll roads. In order to limit the use of local debt, minimum amounts of foreign debt and equity were specified. There are variations among concessions, but typically 45 percent of construction costs must be funded with foreign debt and 10 percent - 25 percent with equity. In return, Government supports the concessionaires' overseas borrowings through exchange rate assurance, whereby the Government undertakes to provide the foreign exchange to service foreign debt at the rate of exchange ruling at the time the loan was entered into.

In addition, Government guarantees a limited amount of foreign borrowing, for a fee, and provides some subsidies. It has made interest-free loans to one private sector concessionaire in years when traffic levels have fallen below a stipulated target. Advances have been made to public sector companies to cover operating deficits.

Concessionaires must each establish a Special Reserve into which they make an allocation of funds when net profit is greater than 10 percent - 15 percent of equity. There are restrictions on the use of the reserve. Payments into and out of the reserve tend to restrict dividends to 6 percent - 15 percent of paid-up capital.

H. United States

Tolling or private sector provision of roads has been out of favor in the US from the early 1950s when the Inter State Highway system was instigated. However, since the late 1980s the whole issue has been revived, and by the early 1990s several concession agreements had been signed. All concessions have been awarded at the state level.

1. California

The State of California has been leading this renaissance, with the first BOT road projects in the country. All of the roads revert to Caltrans (the state DOT on substantial completion) and in most cases are operated through the Transportation Corridor Agencies (TCA) founded in 1986. The concession legislation was passed in July 1989 to allow the four new concession agreements.

SR 91 opened in December 1995 and was the first privately funded electronically tolled project in the US. There are four new express lanes, 16km long, in the median of an existing state road. The road is operated by California Private Transportation Company, under a 35-year concession. There was a competitive bidding process, which called for ideas for private roads and selected those deemed technically and financially the most viable. The concession was signed at the end of 1991 but financial closure only came at the beginning of 1993. In part, the process took a considerable time, because the Government had adopted a flexible approach to project award, in which the preferred bidder and Government negotiated the final elements of the concession (with the runner-up bidders held in reserve) over a period of months. This form of contract award was selected on the basis that it provided the government with the benefits of both innovative project design and risk sharing schemes.

The concessionaire and state signed the concession agreement on the understanding that the outcome of the environmental review process might conclude that the no build option was preferable. Caltrans has agreed not to issue any competing concession (within a defined zone around the project), that it will not develop anything itself, and that it will use its best efforts to ensure that no other agencies develop any such facilities. The concessionaire has rights to ancillary real estate development, though if they use the air space they have to pay \$1 per annum rent for the first 35 years and after than a "fair market lease rate".

There are several performance incentive clauses in the concession agreement — including the number of vehicles using the facility, the number of accidents on the road and the magnitude of the operations and maintenance costs. The incentive is paid in the form of increases in the permitted annual return on investment.

The project cost US\$126 million (US\$7.9 million per kilometer). US\$107 million of debt was raised, giving a debt equity ratio of 85/15. Equity participation, through California Private Transportation Company, came from Cofiroute, a French toll road operating company. US\$7 million in subordinated debt was provided by Orange County (the local authority in the region).

On opening, tolls varied with the time of day and day of week, between \$0.25 and \$2.50 for the full length of the road. There is no toll rate regulation, though there is a maximum 17 percent ceiling on the return to total capital (debt and equity combined). No tolls are charged for cars carrying three or more people. Tolls are paid using a FasTrak in-vehicle tag, which are now also used on all of the TCA roads to ensure that all users in Southern California only require a single tag in their vehicle. Traffic rose from around 8,000 vehicles on an average weekday in January 1996, to around 25,000 by the end of the year.

2. Other Schemes

US State Departments of Transportation have long issued bonds with which to fund roads and bridges (around US\$40 million since 1950). The TCA approach allows such bonds to be issued on a non recourse basis and to secure them solely on the basis of the toll revenues.

Two TCAs have been created in Orange County, California with the express purpose of "Providing significant relief to Orange County's gridlock". The TCAs are the San Joaquin Hills Transportation Corridor and the Foothill and Eastern Transportation Corridor.

Construction began in September 1993 and the San Joaquin Hills Corridor was fully opened in November 1996, four months ahead of schedule. It is 15 km long (with three lanes in each direction and a wide median allowing for future HOV or public transport lanes) and runs parallel to Interstate 5. A turnkey (design/build) approach was used and the road is operated and maintained by the TCA.

The construction cost US\$834 million, not including right of way, finance or administrative costs which were funded from development impact fees, state general funds and the gas tax. In March 1993, the TCA raised US\$1.2 billion in tax exempt, non recourse toll revenue bonds.

FasTrak tags can be used and the toll is distance based and for the full length of the corridor (for a car or motorcycle) is US\$2. This is estimated to save 20 minutes from the Interstate 5 route. There are five vehicle classes.

Foothill and Eastern Transportation Corridor is in fact two schemes, which were cofinanced under two bond issues, which were not backed by any Government body and are funded simply from the toll revenues, development fees and interest earnings:

- In 1993, US\$78.6 million of fixed and variable rate, non recourse, toll revenue bonds was sold to finance the completion of the first section of Foothill-North (1.4 miles). The design and environmental costs of the other parts of the Foothill corridor and for all of the Eastern corridor (other funds for construction came from the state and from development impact fees).
- Similar bonds were sold in June 1995 to raise a further US\$1.5 billion. These bonds, together with some more state and developer funding and the remains of the 1993 issue, paid for the Eastern corridor and completion of the Northern Foothills corridor, as well as the design of the southern part of the Foothills corridor.

The toll for the Northern Section of the Foothills corridor (7.5 miles) is US\$1 for cars and motorbikes. These are lower if only part of the corridor is used, varying from 25 to 75 cents depending on distance. There are 7 classes of vehicle.

Basic tolls for the Eastern Corridor will average 19 cents to 25 cents per mile. The project is expected to be complete by December 1999, when it will be 24 miles long and consist of two lanes in each direction. Traffic is expected to increase and plans have been made for 3-4 lanes in each direction. The total design and construction cost of the corridor, and 4.6 miles of the Foothill corridor, is US\$743.2 million. A turnkey (design/build) structure has been used for construction.

I. Australasia

1. Australia

There has been some experience with BOT style investments in Australia - see Table A2.4. Mostly urban projects, these have included the Sydney Harbour tunnel, the M2, M4, and M5 motorways. Melbourne City Link is currently under construction, and completion is expected in 1999. The total cost of these projects is more than A\$3.5 billion (with the Melbourne City Link estimated to require around A\$1 .8 billion of this over five years.) This can be compared with total annual expenditure of A\$1 billion on all roads in the state of Victoria.

Government involvement in these projects has been substantial in some cases —involving the transfer of land, provision of financing and underwriting of revenue.

Four major Australian Banks (National Australia Bank, Commonwealth Bank of Australia, ANZ Bank and Westpac Banking) have been involved in providing the finance and in underwriting projects. International involvement has commenced with the Melbourne project.

The New South Wales Auditor-General has prepared reports considering the performance of all of the Sydney projects. These reports raised particular concerns about the nature of the road network within which the BOT project operates and the implications of this for risk sharing between Government and concessionaires. However, offsetting this has been the considerable competition for the projects, which is believed to have lowered costs and fostered innovation. Similarly the use of the private sector has encouraged swifter construction — the M4 was completed nine months ahead of schedule and the M5 was completed in 2 rather than 4 years.

Risks for the private sector have been ameliorated through Material Adverse Effect clauses in the BOT contracts. These typically provide for a menu of responses that escalate from toll changes to concession extensions to direct government financial compensation. However there are some protections for government in these clauses — for example, the Material Adverse Effect clauses of the City Link project do not require the government to compensate the developer if a competing heavy rail link is built. On the Melbourne City Link the government has also taken on environmental risks, in that the concessionaire will be compensated if any unidentified pollution or land contamination is discovered.

Table A2.4: Australia: BOT Expressways

Project	Status	Cost	Length	Description
Sydney Harbour Tunnel	Construction began 1988, opened August 1992	<ul style="list-style-type: none"> Construction cost A\$760million Interest free subordinated loan from Road and Traffic Authority (RTA) of \$223 million (repayable 2022) 	4 lanes 2.3km north-south of harbor	<ul style="list-style-type: none"> Concession to 2022 Kumagai Gumi and Transfield as Sydney Harbour Tunnel Company Toll capped by bridge toll in 1987 at \$1 and linked to CPI increases. On opening toll level increase to \$2, an increase greater than underlying inflation RTA agreed an ensured revenue stream to Tunnel Co. for 30 years (Using bridge and tunnel receipts) Free lease of harbor floor for duration of project
M4	Expressions of interest called 1988. Construction period agreed for Jun 1990 to February 1993, but opened in May 1992	Construction costs A\$100million (1998 prices) Total capitalized project cost estimated at \$246 million (1988 prices)	Widening of two sections of motorway and provision of new six lane section Single toll plaza in eastern section (initially planned for western but deemed not financially viable)	<ul style="list-style-type: none"> Concession to 2010 Statewide Roads (SWR) RTA paid for upgrade to access road \$1 toll for cars \$3 for trucks. Increased with inflation in 50cent increments SWP pays rent for land \$22million before commencement and \$24million May 1991 Jan 1997 NSW government introduced cash back scheme reimbursing motorists for tolls (est. cost \$74 million)
M5	Three stage construction. Stage one opened early Oct 1992, not Feb 1995.	<ul style="list-style-type: none"> Construction cost Eastern and middle sections \$295million RTA \$35 million loan RTA \$10 million "construction payment" cover additional works Western section \$65million construction with \$50million RTA loan. RTA gets 70% of any "savings" in construction costs 	Links western Sydney to inner city. Toll plaza in middle section between city and suburbs.	<ul style="list-style-type: none"> 30 year concession RTA acquired land \$22million and Interlink make rental payment from opening Tolls pegged first three years then escalate at CPI. As with M4 NSW government has introduced cash back arrangement

Table A2.4: Australia: BOT Expressways (continued)

Project	Status	Cost	Length	Description
M2		\$600million capita cost (\$30 million sponsor equity rest debt)	<ul style="list-style-type: none"> • 4 lane expressway, 2 lane busway, combined bicycle and breakdown lane • one set of twin tunnels • a number of bridges, overpasses and underpasses. Suburban 	Hills Motorway
Melbourne City Link	<p>Western section completion expected April 1999</p> <p>Southern section completion expected December 1999</p>	<ul style="list-style-type: none"> • Capital Cost estimated at \$1.8billion • \$266 million of state works financed by state 	<ul style="list-style-type: none"> • Links central Melbourne's freeways • 22 km road, tunnel and bridge works • Two sections Western. 13km new and upgraded. • Southern section, 8km New tunnels and some upgrading • Also some state works 	<ul style="list-style-type: none"> • Transurban and CHART shortlisted 1994. 1995 Transurban named preferred bidder. • Transurban = Transfield and Obayashi • 34 concession • Transroute international also involved • Annual concession fees for state support in form of land and works • Electronic tolling • Jan 1995 to 15 years from completion max toll escalates at 4.5% or CPI whichever higher. 15 year to end max. toll escalate quarterly with CPI

Some financial innovations have been introduced in the City Link project, where revenues greater than financial projections will be shared with the state.

The transaction costs of these projects can also be high. For example 22 separate contractual documents were required for the M2 project, for which A\$21 0 million of private equity was raised at a cost of A\$16 million. These costs included underwriting costs, legal costs and the cost of financial advice.

Some reductions in economic benefit have been perceived, as a result of contract structures. For example, on the M5 project, four proposed interchanges have not been built, in order to ensure that toll plazas cannot be avoided and will not be built until after the financial requirements have been met. In addition, network costs are high — in Sydney there are three different types of tolling technology.

Since 1990, RTA of New South Wales has been trying alternative arrangements to meet its mission statement - "To manage road related transport infrastructure to provide safe and efficient access to the road network for the people of New South Wales".

Initially it contracted out for maintenance management and some maintenance delivery on two networks in Sydney. These were not performance-based contracts since the authority took the view that:

- The risks of performance based contracts were too high when there was no proven private sector expertise in road maintenance.
- There was no sufficiently good register of existing asset condition on which to base the contracts.

RTA staff continued to deliver maintenance on one of the two networks, thereby providing easy comparison of quality and price. Contracts were signed for two years.

The management contracts were structured on a "Code of Practice". This determined the technical specifications and the intervention standards required of the managers.

The concerns of the RTA going into the contracts were all satisfied including:

- The emergency response capability of the contractor.
- The quality of the maintenance work.
- The network management processes used by the maintenance manager (which in fact were deemed to have improved on those of the RTA and have been adopted by them).
- Ongoing maintenance of the assets and level of service over the life of the contracts.
- The cost of the maintenance work. This was around 16 percent lower than cost of RTA maintenance initially, though over the course of the contract the RTA costs fell by 22 percent.

In 1993, the RTA determined to re-bid the contracts for a further 2 years. Several bids were received, though the incumbents were all successful in retaining their contracts. The average prices fell again, and were 25 percent lower than on the first contracts.

By 1994, RTA confidence had grown such that it decided to embark on a performance based form of contract. Its objectives were defined as:

- Improving the condition of its road assets and/or reducing total recurrent maintenance costs.
- Enhancing and developing skills in the road industry for effective management and delivery of road asset maintenance.
- Equitably allocating risk between the RTA and contractors.
- Developing and implementing a simply, effective contract which was precise, manageable and allowed “partnering”.
- Developing and encouraging appropriate innovating road maintenance practice.

The RTA wanted to see innovation in the bids and therefore specified little in the call for “concept proposals” except:

- The geographic extent (450km) of the network to be maintained under the contract. The network was selected on the basis of allowing an acceptable cash flow which would also minimize management and investment costs, and ensure a suitable distribution of construction type, age, condition, and usage to minimize the risk exposure of the contractor.
- The duration (between 5 and 15 years).
- The current RTA maintenance budget for the network.
- That a quality assurance form of contract was required.

The RTA also gave all interested parties details of the information that would be available to short-listed bidders.

Four bidders were then invited to submit contract proposals and were given 10 months in which to develop these. The minimum conditions that the RTA specified were only:

- Insurance requirements.
- Provisions for safety and security access to the network.
- Statutory reporting requirements.

All of the bids were reviewed by a panel from RTA which was supported by a consultant from an international management consulting firm. The bids were reviewed on the basis of:

- Commercial benefits for the RTA and government
- The level of asset and environmental protection provided.

- The incident management system.
- The technical advantages of the system proposed.
- The extent of resource transfer from the RTA to the contractor. Prior to the commencement the process, staff and unions had been informed of the RTA's proposal, and it had been agreed that the contract would contain clauses dealing with the transfer of appropriate staff and their conditions of employment under the new contractor.
- The technical and financial capability of the contractor.

Transfield-Maintenance was selected as the preferred bidder and negotiated with the government over seven months to arrive at a contract, which will be in place for 10 years.

The Conditions of the Contract are key to its structure as is the notion of "Fitness for Purpose". Within the conditions of contract is the technical specification of maintenance standards required. There are 51 asset classes, each defined and standards are set for:

- The maintenance rationale.
- The inspection plan.
- The level of service required — which includes the limits of the contractors responsibility, a quality management system, contract management and reporting and procedures for change.
- The intervention standards — which are a safety net to the fitness for purpose standard and specify response times depending on defect severity.
- Any local variations.

Since developing these standards for the performance contract RTA, have come to use them as guidelines for all of its operation.

The contractor is awarded a base monthly fee for the contract (amounting to A\$102 million over 10 years). This is paid on the base inventory of assets. Several commercial schedules were also developed to allow for payment and penalties to be levied. These involve:

- Rates for inventory adjustment.
- Pavement model activity rates — the contract assumes maximum growth factors for traffic and these are reviewed annually.
- Traffic signal upgrade rates.
- Lane occupancy fees.
- Response time non-conformance deductions.
- Management non-conformance deductions.
- Cost adjustments.

- An inventory adjustment threshold schedule — if new assets are added to the inventory it is the contracts duty to maintain them fit for purpose without payment, until the yearly inventory review when the base payments will be adjusted to allow for the addition.
- Review schedules.

The contract defines routine and major maintenance work for all of the asset types — making determinations on the basis of cost effectiveness. Work which is less likely to be required, but is high in cost, tended not to be included in the routine maintenance work — in order to ensure that the costs of the Transfield contract were not pushed up unreasonably.

As well as the basic maintenance services, Transfield is obliged to provide the following provisional services:

- Restoration of excavation work by others.
- Repair of damage to the road from over dimensioned vehicles operating under license.
- Damage from motor vehicle accidents.
- Vandalism, other than graffiti.
- Force majeure damage — defined as events with a lower than one in ten year probability of occurrence.
- Repetitive traffic signal errors.

Since these events are not in the control of either party, Transfield is obliged to provide the services and then to invoice RTA directly. Additional services which become necessary during the course of the contract, but which neither side had foreseen, may be undertaken by Transfield if they are less than A\$60,000 in value. Where the works will cost between A\$60,000 and A\$300,000 then RTA may ask Transfield to undertake the work, may call for bids or use RTA staff directly. Over A\$300,000 RTA must either call for bids or use RTA staff.

There is a fully developed Quality Assurance regime including plans for:

- Quality.
- Contract management.
- Environmental management.
- Incident response.
- Community relations.
- Asset management.
- Occupational, health, safety and rehabilitation.

Fitness for purpose is measured against level of service provided on each asset. This is measured against such indicators as average roughness per link (for pavement) and condition indices for bridges. In order to measure these, Transfield is required to collect various data for the RTA on the asset inventory and condition, traffic volumes, truck weights and maintenance amounts and locations.

RTA and Transfield have entered into a “partnering” arrangement. Both sides seek to address issues at the lowest possible managerial level and to address them swiftly. RTA has one manager of the contract (spending approximately 50 percent of his time) and one full time supervisor.

2. New Zealand

The New Zealand Government has privatized many of the managerial functions under its auspices. This has been a strategic decision to develop the private sector within the country and to reduce public sector involvement and has covered all sectors, including transport. Hence there is now only a very small staff within the Ministry of Transport. The ministry relies on two larger bodies to manage its work — Transit (which plans, maintains and manages the network) and Transfund (which controls the funds).

There are 90,000 km of roads in New Zealand, in which the Government makes an annual investment of NZ\$0.4 billion per year. Transit manages the state highway network of 10,300 kms. Approximately half of its expenditure goes towards construction and emergency works, 16 percent to preventive maintenance and 35 percent to routine maintenance.

a. Maintenance Management Contracts

Transit undertakes little of the construction or maintenance work in-house. There are instead, 24 professional management contracts, with a maximum contract period of 3 years. These management contractors oversee the physical work done by the maintenance contractors (for which there are 220 contracts). The maintenance contractors are typically paid on unit rates for the completion of work and the managers through a lump sum payment on completion of the service. The savings from this contracting-out saved Transit around 17 percent of the total cost. However, the system was perceived to have some disadvantages:

- The short contracts meant that maintenance work was undertaken to last for three years — no consideration was given to life costs.
- Several contractors did not perform to time and budget which meant expensive litigation.
- There has been an adversarial relationship between government, management contractors and maintenance suppliers.

As a result, Transit has begun a trial program of performance-specified maintenance contracts combining the physical works and the professional management services. The payment for these contracts is on output specifications with the contractors determining how the work is undertaken. Lump-sum payments are made at the end of 10 years, if the required condition has been delivered. Contractors are required to develop their own quality management systems to demonstrate that they are complying with the contract. It is hoped that the trial will:

- Remove administrative costs in servicing the periodic contracts.
- Encourage physical contractors and the managers to work as a team.
- Force the contractor to consider a longer horizon and thereby produce higher quality work.

- Promote innovation.

The trial is to be staged, over two networks (representing approximately 10 percent of the New Zealand road network and NZ\$9 million per year). The first tender is due to be let in December 1998, through a competitive bidding procedure, in which there will be a quality/price trade off. Conforming bids must be submitted but bidders may also submit alternatives.

There has been some concern from the existing local contractors that international contractors will be attracted and that the small contractors may lose out because of the size of the contracts. There is also some concern that the contractors will not be able to perform the self-monitoring role.

b. BOT Projects

There are no BOT road projects in New Zealand. Two potential BOT projects are Second Harbour Crossing and South Eastern Arterial Route Scheme in Auckland.

However a BOT project would require legal changes to allow the private sector to charge and collect tolls.

c. Corporatization

Currently New Zealand is considering corporatization of their road network, following a report from the "Roading Advisory Group" published in November 1997. The Roading Advisory Group saw the concerns with the existing road system management as:

- The lack of a direct relationship between road pricing and use — pricing is currently through a fuel tax (9.5c of which goes directly into a road fund the rest to the exchequer), vehicle registration charges, and road user charges levied on larger vehicles according to weight and usage.
- The lack of a direct relationship between road providers and users.
- The lack of commercial incentives to invest in road infrastructure.

However the Government objective that the highways must remain in public ownership has been taken into account and hence the recommended corporatization of the road network by transferring the assets held by Transit and the local authorities into the hands of road companies which "should be financially viable". The road companies would own corridors or defined networks, for which they would be fully responsible — in terms of maintenance, safety, environmental management, user relations, and pricing. Each user would be required to pay the actual cost of their use of the road system, and the road companies would be fully responsible for price setting and would charge directly for road use at the local level.

J. South Africa

There are 7,000 km of road in the South African national road network, and some 660 km of that are presently tolled, at 18 toll plazas. BOT projects have not been the normal "modus operandi" until the last few years — instead most roads were operated for the Government under management contracts (with fixed terms of between 3 and 5 years).

However, the current policy is for all new toll road projects to be undertaken under the BOT mechanism and to be fully privately funded over 30 years.

1. N4 Motorway

The N4 project is a cross border, concessioned toll road, from Maputo in Mozambique to Witbank in South Africa, and is the first BOT road for either country. There is an existing road for 390 km, which will be upgraded substantially and a further 50 km must be built. The existing traffic on the road is fairly low, but expected to increase with the upgrading. There will be no parallel free road — in most places, although there has been some political backlash, particularly in middle class towns in South Africa, where protests have forced local politicians to offer improved facilities on the adjacent roads.

Having called for bids in 1995, and short-listed three consortia in 1996, the concession agreement was signed in May 1997 with the TRAC consortium which includes the Bouygues group and two local contractors. Both countries signed the 30-year concession agreement, which added legal complexity because of their different national legislation. With Bouygues' encouragement, the Hungarian M5 concession model, was used as the basis of the N4 agreement. This means that some of the complexities of the Hungarian model (some of which were necessary only because of the specifics of Hungarian legal practices) have been duplicated.

The TRAC consortium has agreed a fixed price, fixed time design and construction contract with SSB, a joint venture of Bouygues, Basil Read and Stock Roads (all part of TRAC). Construction has been phased over 3.5 years and began in January 1998.

Financial closure was reached within seven months of signing the concession agreement. Debt of US\$308 million has been raised. US\$68 million of equity will be drawn down over the life of the project to maintain a 80:20 debt/equity ratio. Up to 40 percent of the equity is held by the sponsors. Development Bank of South Africa was one of the chief arrangers of the financing. Some of the upside potential has been shared with the two governments.

There are 5 toll plazas along the road, three in RSA and two in Mozambique but none at the border. The RSA plazas are expected to open within 18 months of the start of the contract but the others not until the end of the construction period. The location of each plaza has caused political concern. In Mozambique one toll plaza is located to capture commuting traffic into Maputo. In South Africa, as already mentioned, there has been some political intervention by the mining communities of Witbank and Middleburg, just outside Pretoria, which resulted in the upgrading of the parallel "free" road.

There are level of service criteria in the concession agreement, and future expansions are envisaged if traffic grows. TRAC has certain pre-emptive rights over services alongside the road.

The N4 is one of several initiatives being undertaken in the corridor, including an upgrade of the rail link from the border to the port. The development of the corridor is being promoted by both countries through the Maputo Corridor Company, and supported by the South African Development Bank.

2. Other Concessions under Development

Two other road BOT projects are currently under development in South Africa:

- The N3 Heidelberg - Cedara (part of the road between Johannesburg and Durban). 110 km of new road is required and 60 km of upgrading from a single to a dual carriageway. Bids have been submitted.
- The N4 West Platinum Toll Road from Pretoria to the RSNBotswana border which will be 380 km long. The shortlist has been prepared and the preferred tenderer is to be selected in November 1998. The road is the last link in the East-West international highway linking Walvis Bay in Namibia with Maputo in Mozambique.

3. Operators

The South African firm, Intertoll, has become a major international toll road operator, having started in RSA in 1984 to undertake management contracts for the DOT. In 1992, the company started to diversify and took on its first concession project in Hungary in 1993 (the M5). It has since entered into joint venture agreements

BOT PROJECT DATABASE SUMMARY

Country	PROJECT STATUS					Total
	Open	Construction	Planning	Pre-Planning	Abandoned	
Bangladesh			1			1
Hong Kong, China	4	1				5
India			11	4		15
Indonesia	2	6	7	20		35
LaoPDR			1			1
Malaysia	9	15	8	8		40
Pakistan	1		3			4
Philippines		5	9	1		15
Sri Lanka			1			1
Thailand	5	5	2	1	2	15
Viet Nam				1		1
Total	21	32	43	35	2	133
PRC	21		11	3		35

NOTE: Figures are comprehensive, except for PRC where it is very difficult to establish the scale of activity with confidence.

BOT PROJECT DATABASE

Stage	Scheme	Location	Opening	Length (km)	Cost (\$b)
Bangladesh					
Planning	Dhaka Eastern Bypass	Urban			
Hong Kong, China					
Construction	Route 3 : Country Park Section	Urban	1998	10	0.9
Open	Western Harbor Crossing	Urban	1997		0.7
Open	Tate's Cairn Tunnel	Urban	1991	4	
Open	Eastern Harbor Crossing	Urban	1989	2	0.5
Open	Cross Harbor Crossing	Urban	1972	2	
India					
Planning	Coimbatore Bypass, Tamil Nadu	Inter-Urban		28	0.03
Planning	Baroad-Halol, Gujarat	Inter-Urban	2000	33	0.03
Planning	Ulhas creek, Maharashtra	Inter-Urban		18	0.03
Planning	Jalagon Bridge, Maharashtra	Inter-Urban		0.4	0.04
Planning	Hetwa Bridge over River Koyana	Inter-Urban			0.02
Planning	Narmada Bridge, Gujarat	Inter-Urban		1	0.04
Planning	Ahmedabad-Vadodora Expressway	Inter-Urban			
Planning	Bombay-Vadodora Expressway	Inter-Urban			
Planning	Manmad bypass	Urban			0.005
Planning	Delhi Bypass	Urban		56	0.2
Planning	Delhi Bridge	Urban			0.1
Pre-Planning	Rajasthan 5 Highways	Inter-Urban			
Pre-Planning	Bombay-Pune Expressway	Inter-Urban			
Pre-Planning	Delhi-Ambala Expressway	Inter-Urban			
Pre-Planning	Bangalore-Mangalore Expressway	Inter-Urban			
Indonesia					
Construction	Tanjung Priok to Cikunir	Inter-Urban		19	0.08
Construction	Jakarta Outer Ring Road (West 2)	Urban		10	
Construction	Bekasi-Gunungputri Toll Road	Urban		22	
Construction	Jakarta Outer Ring Road (East 1)	Urban		12	
Construction	Jakarta Outer Ring Road (West 1)	Urban		11	
Construction	Pondokaran-Serpong Toll Road	Urban		7	
Open	Jakarta N-S	Urban	1989	17	
Open	Jakarta Outer Ring Road (South)	Urban	1996	14.83	
Planning	Pandaan-Pasuruan Toll Road	Inter-Urban		32.5	
Planning	Ciawi-Sukabumi	Inter-Urban		56	
Planning	Cikampek-Padalarang	Inter-Urban			0.7
Planning	Dawaan-Palimanan Toll Road	Inter-Urban			
Planning	Aloha Waru-Tg Parak	Urban		18.4	0.25
Planning	Jakarta Second Outer Ring Road	Urban		10	
Planning	Tanjung Priok Link to Jembatan Tiga	Urban		13.94	
Pre-Planning	Namtingan-Ngawi	Inter-Urban		35	
Pre-Planning	Java Bali Bridge	Inter-Urban			
Pre-Planning	Cipadak Pelabuhan Ratu	Inter-Urban		30	
Pre-Planning	Serpong-Parung	Inter-Urban		17	
Pre-Planning	Antasari-Depok	inter-Urban		18	
Pre-Planning	Cilegon-Labuan	Inter-Urban		65	
Pre-Planning	Cilegon-Bojangara	Inter-Urban		10	
Pre-Planning	Serpong-Parung Panjang	Inter-Urban		30	
Pre-Planning	Medan-Kualanamu	Inter-Urban		27	
Pre-Planning	Ngawi-Caruban	Inter-Urban		34	

Stage	Scheme	Location	Opening	Length (km)	Cost (Sb)
Pre-Planning	Sepong-Tangerang	Inter-Urban		16	
Pre-Planning	Surakarta-Mantingan	Inter-Urban		20	
Pre-Planning	Cirebon-Tegal	Inter-Urban		35	0.2
Pre-Planning	Cilegon-Teluk Banten	Inter-Urban		13	
Pre-Planning	Cilegan-Lanuan	Inter-Urban		60	
Pre-Planning	Kanci-Pejagan	Inter-Urban		34	0.25
Pre-Planning	Ujungpandang Toll Road	Inter-Urban			0.05
Pre-Planning	Samarang Section C Toll Road	Inter-Urban			
Pre-Planning	Medan-Binjai	Inter-Urban		25	
Pre-Planning	Tangerang Outer Ring Road	Urban		10	
Lao PDR					
Planning	Chaing Rai-Laos-Kunming	Inter-Urban			
Malaysia					
Construction	Assamjawa-Taman Rimba Templer	Inter-Urban	2001	31	0.2
Construction	East Coast Expressway	Inter-Urban	2006	338	1.1
Construction	Ipoh-Lumut Highway	Inter-Urban	2002	70	0.2
Construction	Dedicated Highway	Inter-Urban	2001	42	0.6
Construction	New North Klang Straits Bypass	Inter-Urban	1998	15	
Construction	New Pantai Highway	Inter-Urban	2000	20	0.2
Construction	Kajang-Seremban Highway	Inter-Urban	2000	49	0.3
Construction	Kajang Traffic Dispersal Ring Road	Urban	2000	37	0.3
Construction	Butterworth Outer Ring Road	Urban	2002	19	0.1
Construction	Ampang Elevated Highway	Urban	2000	7	0.1
Construction	Sungai Besi Highway	Urban	1999	16	0.1
Construction	Cheras-Kajang Road Upgrade	Urban	1999	12	0.1
Construction	Damansara-Kuchong Highway	Urban	1999	40	0.3
Construction	Western KL Trasn Dispersal Scheme (SPRINT)	Urban	2001	26	0.3
Open	Butterworth-Kulim Expressway	Inter-Urban	1996		24
Open	Second Malaysia-Singapore Crossing	Inter-Urban	1998	5	0.3
Open	KL-Karak Highway Upgrading	Inter-Urban	1994	60	0.1
Open	Penang Bridge	Inter-Urban	1996		14
Open	North-South Expressway Central Link	Inter-Urban	1996	48	0.3
Open	North South Expressway	Inter-Urban	1988/1994	848	1.6
Open	Seremban-Port Dickson Highway	Inter-Urban	1998	23	0.1
Open	New Klang Valley Expressway	Urban	1994		
Open	Shah Alam Expressway	Urban	1995-1998	35	0.5
Planning	West Coast Expressway	Inter-Urban	2005	260	
Planning	Gemas-Pasir Gudang Expressway	Inter-Urban		250	0.7
Planning	Penang Second Crossing	Inter-Urban	2003	6	0.5
Planning	South Klang Valley Expressway	Inter-Urban	2003	45	0.4
Planning	KL -Elevated Federal Expressway	Urban		22	0.6
Planning	Guthrie Road	Urban	2001		
Planning	Jelutong Expressway (Penang)	Urban		9	
Planning	Pandan Corridor Road	Urban	2002	15	0.3
Pre-Planning	Muar-Tangkak-Segamat Highway	Inter-Urban		43	0.6
Pre-Planning	Second East-West Road	Inter-Urban			
Pre-Planning	Malaysian-Thailand Land-Bridge	Inter-Urban			2.7
Pre-Planning	KL North-East Expressway	Inter-Urban	2001		
Pre-Planning	Penang Outer Ring Road	Urban	2002	21	0.5
Pre-Planning	River Klang Elevated Expressway	Urban	2002	22	0.6
Pre-Planning	KL North-Western Dispersal Scheme	Urban	2001	15	
Pre-Planning	KL Eastern Expressway (KLEE)	Urban	2002		

Stage	Scheme	Location	Opening	Length (km)	Cost (\$b)
Pakistan					
Open	Islamabad-Lahore Motorway	Inter-Urban	1997	340	0.7
Planning	Lahore-Faislabad Highway	Inter-Urban			
Planning	Peshwar-Islamabad Highway	Inter-Urban	2001		0.5
Planning	Karachi-Peshawar	Inter-Urban			0.5
Philippines					
Construction	South Luzon Expressway Ext to Pagbilao	Inter-Urban		105	0.3
Construction	North Luzon Expressway Ext to Clark/Subic	Inter-Urban		157	0.5
Construction	STAR (South Tagalog Arterial) Road to Bantangas	Inter-Urban		33	0.1
Construction	Skyway Stage 1	Urban		9	0.4
Construction	Manila-Cavite Expressway	Urban		16	0.3
Planning	Calamba-Tagaytay	Inter-Urban		20	0.1
Planning	North Luzon Pangasinan Extension	Inter-Urban		255	0.45
Planning	PNR Pabahay Sa Riles Expressway	Urban		16	0.4
Planning	C6 North	Urban		48	1.2
Planning	Pasig Expressway	Urban		19	0.8
Planning	Manila Skyway Stage 2/3	Urban		21	0.9
Planning	C6 South	Urban		18	
Planning	R10-C3	Urban		7	0.1
Planning	C6 Central	Urban		23	
Pre-Planning	North Luzon Expressway to Cagayan Valley	Inter-Urban		270	0.6
Sri Lanka					
Planning	Katanayake Expressway	Urban			
Thailand					
Abandoned	Khlong Saen Sep	Urban	n/a	18	0.3
Abandoned	Hopewell	Urban	n/a		
Construction	Bang Na-Trat Expressway	Inter-Urban		55	0.65
Construction	Outer Ring Road East	Urban		62	
Construction	Don Muang Tollway Extension	Urban		13	0.1
Construction	Outer Ring Road : West-South	Urban			
Construction	2nd Stage Expressway Northern Extn.	Urban		34	0.6
Open	Bangkok-Chonburi Highway	Inter-Urban	1997-1999	83	0.3
Open	Don Muang Toliway	Urban	1995-7	15	0.3
Open	Second Stage Expressway System	Urban	1993	39	1.1
Open	First Stage Expressway System	Urban	1987	27	
Open	Ekamai-Ram Indra Expressway	Urban	1994-7	19	0.85
Planning	Third Stage Expressway System	Urban		33	1.0
Planning	Fourth Stage Expressway Systems	Urban			
Pre-Planning	National Motorway System	Inter-Urban		4150	12.4
Viet Nam					
Pre-Planning	Hanoi-Haiphong Highway	Inter-Urban			

REFERENCES

Access Road Network to Cordoba City. Environmental and Social Impact Brief. 1998. IADB.

Ailport, R.J., G. K. Key and G.M. Melhuish. 1998. *A New Approach to Setting the Transport Agenda.* ADB Occasional Paper No. 17.

Argentine Republic National Highways Rehabilitation and Maintenance Project. 1998. Project Appraisal Document. World Bank.

Asian Development Bank (ADB). 1993. *Economic Cooperation in the Greater Mekong Subregion.* Manila:ADB.

_____. 1996. *Private Sector Development - Strategy, Policies, Modalities & Procedures.*

_____. *Seminar on the Bank's Guarantees for Private Infrastructure Projects.* (DMG)

_____. *ADB Support for Infrastructure Projects Involving Public-Private Partnerships.* Report of ADB/IIF Working Group.

_____ 1994. *Approach to BOT Projects and ADB's Experience in BOT Project Financing, International Seminar on Financing in the China Power Sector.*

Bangladesh Country Workshop, March 1997: overheads

- Heggie, Ian. How to Establish an adequate and Stable Flow of Funds for Roads.
- Heggie, Ian. Innovations in Management & Financing of Roads: Worldwide Trends.
- Schelling, Dieter. Institutional and Financial options for Rural Roads.

Barriers to Private Sector Participation in Key Infrastructure Sectors in East Asia. 1994. M Stanfield & Associates, 1994

Clements, D. and W.S. Atkins. DBFO: Developing the Operator Role. Economists Group. Du Plooy, A. S. *The Involvement of Road Users in the Management of Roads: The South African Example.*

Dunlop, Robin J. 1998. *Transit New Zealand Experience in Road Maintenance.* Presentation to the World Bank, April 1998, Robin J Dunlop, General Manager, Transit New Zealand.

Financing Private Infrastructure, IFC Lessons of Experience, 1996

Fishbein, Gregory and Suman Babbar. 1996. *Private Financing of Toll Roads.* World Bank

Frost, Malcolm, Christine Lithgow. 1996. Improving Quality and Cutting Costs Through Performance Contracts: the Australian Experience. Contract Legal Services, World Bank Seminar, December 1996

General Features of Financial Aspects of Negotiated Toll Road Agreements. 1998. DPWH Philippines.

General Policies for Financial Analysis of Negotiated Toll Road Proposal. 1998. DPWH, Philippines.

Gentili, Gustavo Marcelo and Jose Enrique Erbetta. 1997. *Maintenance Concessions for National Road: The Argentine Experience*.

Gray, P. 1997. *Colombia's Gradualist Approach to Private Sector Participation in Infrastructure*. World Bank

Heggie, I. 1995. *Managing and Financing of Roads - An Agenda for Reform*. World Bank

Infrastructure Development in East Asia and the Pacific - Towards a New Public-Private Partnership. 1995. World Bank.

Japanese Toll Road Study. (World Bank executed), The Infrastructure Development Group, Economist Group

Kert, Michel et al. 1998. *Concessions for Infrastructure: A Guide to their Design and Award*. Washington, DC: World Bank.

Management of New Zealand's National Roads Fund. 1997. Paper presented to World Bank Road Maintenance and Finance Workshop, February 1997.

Philippines Transport Strategy Study - Volume 1: Executive Report. 1997. Halcrow Fox for ADB.

Poland A2 Motorway - Preliminary Information Memorandum

Poland Toll Motorway Act

Private Investment in Urban Roads. 1997. Australian Industry Commission.

Road Reform - The Way Forward. 1997. Roading Advisory Group, Final Report.

Robinson, P. *Melbourne City Link - Tolling Technology to Meet the Needs*.

Roth, G. 1996. *Roads in a Market Economy*. Avebury Technical.

Ruster, Jeff. 1997. *A Retrospective on the Mexican Toll Road Program 1989-1994*. World Bank

Shaw, L. Nicola, Kenneth M Gwilliam, and Louis S Thompson. 1996. *Concessions in Transport*. World Bank.

TA 2649: *Facilitating the BOT Modality in the Road Sector' Draft Final Report*, Hyder, August 1997.

TA MAL 2498: *Malaysia - Strengthening the Regulatory System for Private Sector Infrastructure*, NERA, May 1997.

TA PAK 2176: *Promotion of Private Sector Participation in Road Financing, Construction and Operation*. Phase 1 Report: Review of International Experience — Halcrow Fox for ADB, April 1995.

TA PRC 2409: *Appraisal Methodologies and Restructuring Road Financing*, NM Rothschild and SDG, November 1997.

The Private Finance Initiative: The first four design, build, finance and operate road contracts. 1998. HMSO.

Toll Policy and its Application to Birmingham Northern Relief Road. 1996

Transport Infrastructure - Mobilising Private Investment. 1993. UK Chartered Institute of Transport.

Transport Operations Policy. 1997. EBRD.

World Infrastructure Forum 1999; and Reports of Findings of the 1994 and 1997 Forums.